



STIKINE RIVER STUDIES: ADULT SALMON TAGGING, POPULATION
INVESTIGATIONS, AND SIDE SCAN SONAR OPERATIONS, 1983

By:
Brian Lynch
and
John Edgington

June 1986

ADF&G TECHNICAL DATA REPORTS

This series of reports is designed to facilitate prompt reporting of data from studies conducted by the Alaska Department of Fish and Game, especially studies which may be of direct and immediate interest to scientists of other agencies.

The primary purpose of these reports is presentation of data. Description of programs and data collection methods is included only to the extent required for interpretation of the data. Analysis is generally limited to that necessary for clarification of data collection methods and interpretation of the basic data. No attempt is made in these reports to present analysis of the data relative to its ultimate or intended use.

Data presented in these reports is intended to be final, however, some revisions may occasionally be necessary. Minor revision will be made via errata sheets. Major revisions will be made in the form of revised reports.

STIKINE RIVER STUDIES:
ADULT SALMON TAGGING, POPULATION INVESTIGATIONS
AND
SIDE SCAN SONAR OPERATIONS, 1983

By:
Brian Lynch
and
John Edgington

Alaska Department of Fish and Game
Division of Commercial Fisheries
Petersburg, Alaska

June 1986

TABLE OF CONTENTS

	<u>Page</u>
LIST OF TABLES	i
LIST OF FIGURES	ii
LIST OF APPENDICES	iii
ABSTRACT	v
INTRODUCTION	1
METHODS	1
Fishwheels	1
Gill Nets	4
Side Scan Sonar	4
Scale Sampling	7
Tag Recovery and Population Estimates	11
Scale Pattern Analysis	12
Egg Diameter Analysis	13
RESULTS	13
Fishwheels	13
Gill Nets	13
Side Scan Sonar	13
Sockeye Salmon	17
Chinook Salmon	17
Pink Salmon	24
Chum Salmon	24
Coho Salmon	24
Dolly Varden Char	24
Steelhead Trout	25
Population Estimation	25
Mark-Recapture	25
Scale Pattern Analysis	25
Egg Diameter Analysis	25
Adult Migration	26

TABLE OF CONTENTS (Continued)

	<u>Page</u>
DISCUSSION	26
ACKNOWLEDGMENTS	34
LITERATURE CITED	36
APPENDIX A	37
APPENDIX B	49
APPENDIX C	61
APPENDIX D	64
APPENDIX E	66
APPENDIX F	69

LIST OF TABLES

<u>Table</u>	<u>Page</u>
1. Percent sonar allocation by species based on an adjusted gillnet/fishwheel composition, 1983	8
2. Percent species composition of the Canadian commercial fishery, 1983	10
3. Stikine River fishwheel catches by species, by week, 1983	14
4. Sonar #1, counts by sector, 1983	15
5. Sonar #2, counts by sector, 1983	16
6. Stikine River sonar counts by species and week, based on Canadian fishery and fishwheel catches, not adjusted for "shadow" areas, 1983	18
7. Stikine River sonar counts, based on Canadian fishery species composition, adjusted for "shadow" areas, 1983	19
8. Canadian lower Stikine River commercial fishery catches, 1983 . .	22
9. Sockeye salmon stock composition of the Canadian lower Stikine River commercial gillnet fishery, 1983	27
10. Upper Stikine sockeye salmon return estimates by stock, based on scale pattern analysis, 1983	28
11. Stikine River sockeye salmon inriver population estimates by estimation method, 1983	29
12. Stikine River sonar counts, by species, based on Canadian fishery species composition, not adjusted to the "shadow" areas, 1983	32
13. Stikine River sonar counts, by species, based on fishwheel catches adjusted for "shadow" areas, 1983	33

LIST OF FIGURES

<u>Figure</u>	<u>Page</u>
1. Stikine River showing proposed dam sites	2
2. Stikine River gillnet, fishwheels, and sonar sites	3
3. Canadian gill net locations	5
4. Side view of sonar Site #1 beam locations	9
5. Sockeye, coho, and total salmon sonar counts for sonar Sites #1 and #2 combined, 1983	20
6. Stikine River sonar counts, by species, for sonar Sites #1 and #2 combined, 1983	21
7. Relationship between high tide and daily sonar peaks for sonar Sites #1 and #2, 1983	23
8. Sockeye salmon stock run timing into the Canadian lower Stikine River commercial gillnet fishery and the weekly counts at the Tahltan Lake weir, 1983	30
9. Cumulative percent lower Stikine River sockeye salmon stock escapement, 1983	31

LIST OF APPENDICES

<u>Appendix Table</u>	<u>Page</u>
APPENDIX A - 1983 DAILY AND CUMULATIVE STIKINE RIVER FISHWHEEL CATCH TABLES	
A-1. 1983 daily and cumulative catches for fishwheel 1A	38
A-2. 1983 daily and cumulative catches for fishwheel 1B	41
A-3. 1983 daily and cumulative catches for fishwheel 2A	44
A-4. 1983 daily and cumulative catches for fishwheel 2B	47
APPENDIX B - 1983 STIKINE RIVER TAG RECOVERY TABLES	
B-1. 1983 Stikine River secondary Petersen disc tags recovered from sockeye salmon in the Canadian commercial fishery	50
B-2. 1983 Stikine River primary Petersen disc tags recovered in the Canadian commercial fishery	55
B-3. 1983 spaghetti and jaw tags recovered in the Canadian commercial fishery	57
B-4. 1983 Stikine River tributary and miscellaneous tag recoveries	59
APPENDIX C - 1983 DAILY AND CUMULATIVE CANADIAN STIKINE RIVER COMMERCIAL CATCH TABLES	
C-1. 1983 daily and cumulative sockeye salmon catch from the Canadian lower Stikine commercial fishery	62
C-2. 1983 Canadian lower Stikine commercial fishery catches	63
APPENDIX D - 1983 DAILY AND CUMULATIVE SOCKEYE SALMON SCALE COLLECTION FROM THE CANADIAN AND STIKINE RIVER COMMERCIAL FISHERY	
D-1. 1983 daily and cumulative sockeye salmon scale collection from the Canadian lower Stikine River commercial fishery	65
APPENDIX E - 1983 DAILY AND CUMULATIVE SOCKEYE SALMON COUNTS AT THE TAHLTAN WEIR	
E-1. 1983 daily and cumulative sockeye salmon counts at the Tahltan weir	67

LIST OF APPENDICES (Continued)

<u>Appendix Table</u>	<u>Page</u>
APPENDIX F - 1983 CANADIAN STIKINE RIVER COMMERCIAL FISHERY CATCH AND STOCK COMPOSITION TABLES AND ENTRY PATTERN CURVES DEVELOPED FROM CANADIAN DEPT. OF FISHERIES AND OCEANS DATA	
F-1. 1983 sockeye salmon stock composition of the Canadian lower Stikine River commercial gillnet fishery (Canadian data) . . .	70
F-2. Sockeye salmon stock composition of the Canadian lower Stikine River commercial gillnet fishery, 1983 (Canadian data)	71
<u>Appendix Figure</u>	
F-1. Sockeye salmon run timing into the Canadian lower Stikine River commercial gillnet fishery and the weekly counts at the Tahltan Lake weir, 1983	72
F-2. Cumulative percent lower Stikine River sockeye salmon stock escapement, 1983	73

ABSTRACT

The second season of adult salmon sonar counting, tagging adult salmon captured via fishwheels, and the first season of using gill nets to capture adult sockeye salmon (*Oncorhynchus nerka*) for tagging on the Stikine River are reported. Sonar transducers were mounted on Biosonics, Inc. rotators enabling the operator to count any section of the water column out to 100 feet into the river. The total of all fish counted was 79,975. Sockeye salmon, the target species, had a total count of 26,040, an apparent undercount of 34.0% to 57.4%. A second method of sonar count expansion that expanded the counts to areas not encompassed by the sonar beam was developed after the counting season. This expansion method yielded counts of 127,961 total fish and 72,785 total sockeye salmon. However, this method appears to undercount the other anadromous species found in the Stikine River. Peak sonar counts were correlated with high tide influence. Coho salmon appear to be more effectively counted with the movable transducers.

During 1983 we tagged and released 2,932 salmon of all species via fishwheels and gill nets. We tagged 778 sockeye salmon of which 292 were recovered in the Canadian lower river commercial gillnet fishery. The mark-recapture population estimate from tagging at the Rock Island gillnet site (652 tagged and released, 192 recaptured) was $64,619 \pm 8,763$ sockeye salmon. Analysis of sockeye salmon scale patterns gave an in-river sockeye salmon population estimate of 71,574, of which 46.8% were Tahltan Lake stock and 53.2% were main stem stocks. Sockeye salmon egg diameter analysis conducted in conjunction with LGL, Ltd. at the Canadian fishery resulted in a population estimate of 61-71,000 sockeye salmon, where 45-53% were Tahltan stock and 47-55% main stem stocks. Migration timing based upon scale pattern analysis showed the migration rate of Tahltan-bound fish to be from 10.7 to 11.6 miles per day.

KEY WORDS: sonar counting, sockeye salmon, *Oncorhynchus nerka*, tagging, population estimate.

INTRODUCTION

The Stikine River Studies began in 1982 as a fisheries research effort to establish a data base from which to gauge the possible effects of the hydro-electric dams proposed by B.C. Hydro and Power Authority, a Canadian Crown Corporation, on the Stikine and Iskut Rivers (Figure 1). The overall research objectives in 1982 were to: (1) enumerate the five species of anadromous salmon passing upstream, (2) locate salmon spawning gravels by stream, and (3) locate productive salmon rearing habitat associated with the Stikine River during each season and the physical conditions controlling that habitat. Essentially the objectives have remained the same except for changing the sonar counting methods to increase the portion of the river area ensonified, and increased emphasis on counting and tagging adult sockeye salmon and sockeye salmon scale collection.

The tagging and scale sampling efforts during 1983 focused on the enumeration of the two major populations of sockeye salmon found in the Stikine, the Tahltan Lake stock, and main stem stocks. Prior to 1982, it was assumed that the majority of sockeye salmon returning to the Stikine were of Tahltan Lake origin; main stem spawners were not thought to exist in large numbers (Bergmann 1978). A Peterson mark-recapture tagging study was used to estimate the total population size, while scale pattern analysis and egg diameter analysis were used to estimate the population size and apportion the population to the two different stocks. Scale pattern analysis was also used to examine the swimming speeds and entry timing into the river.

METHODS

Fishwheels

Four fishwheels were installed during 1983: Site 1A (rivermile 16.5) on 8 June; Site 2A (rivermile 17.5) on 10 June; Site 1B (rivermile 17.0) on 27 June; and Site 2B (rivermile 18.0) on 23 July (Figure 2).

The fishwheel design, operation, and procedures were identical to those used in 1982 (Edgington and Lynch 1982). Fishwheel catches and tag recovery data are presented in Appendix A and Appendix B, respectively.

Mid-eye-fork (mid-eye-fork-of-tail) length and sex were recorded for all species captured. Petersen disc, spaghetti, or jaw tags (National Band and Tag Co.)¹ were affixed to all species, when possible, except Dolly Varden char (*Salvelinus malma*). The Petersen disc tags were used as "secondary" tags for sockeye salmon (*Oncorhynchus nerka*) as part of the U.S./Canada Salmon Interception Studies and on adult coho salmon. "Primary" tags had been applied to sockeye salmon offshore to examine interception rates, and migratory and timing patterns, whereas the "secondary" tags were applied to sockeye salmon captured

¹ Mention of trade names does not constitute endorsement by ADF&G.

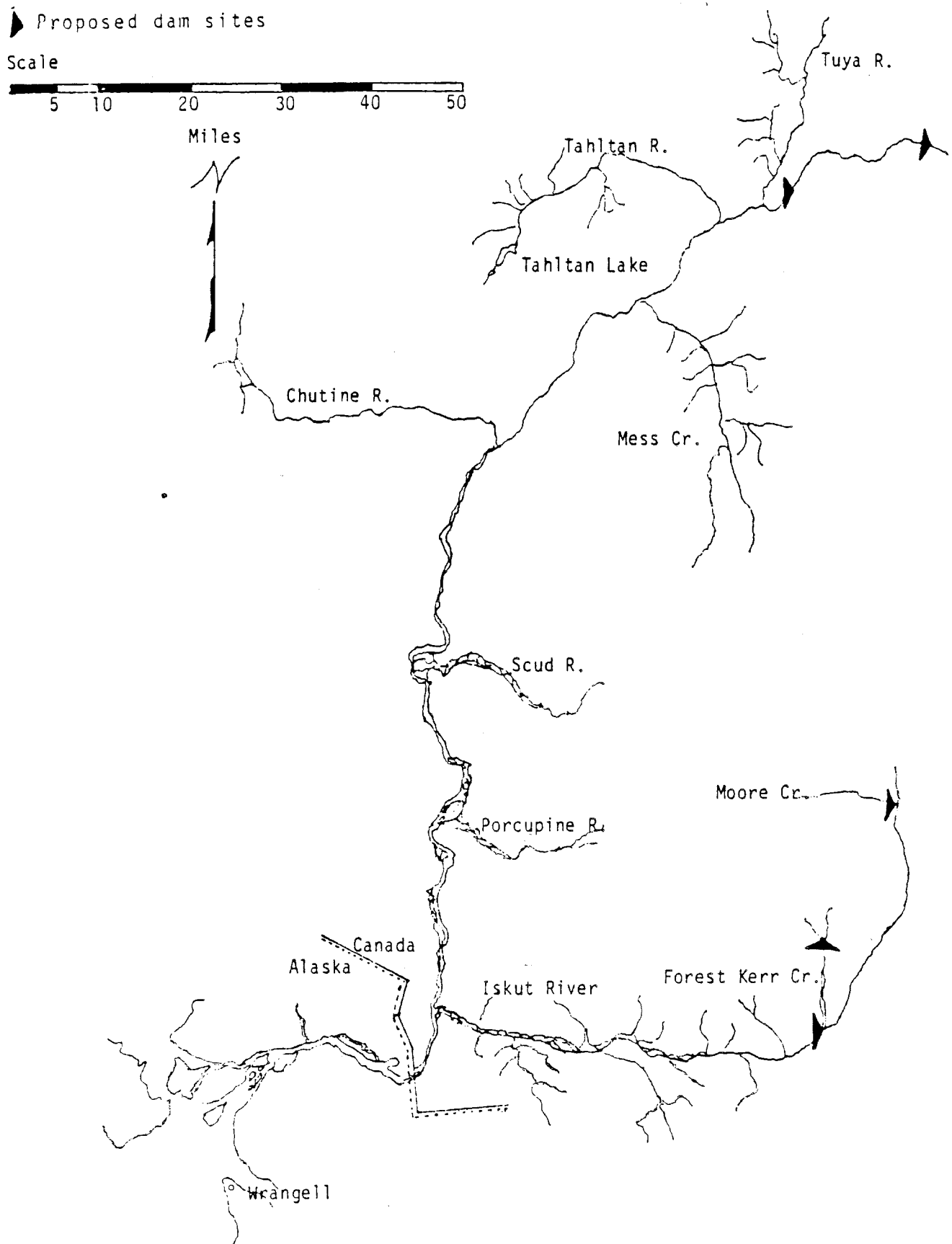


Figure 1. Stikine River showing proposed dam sites.

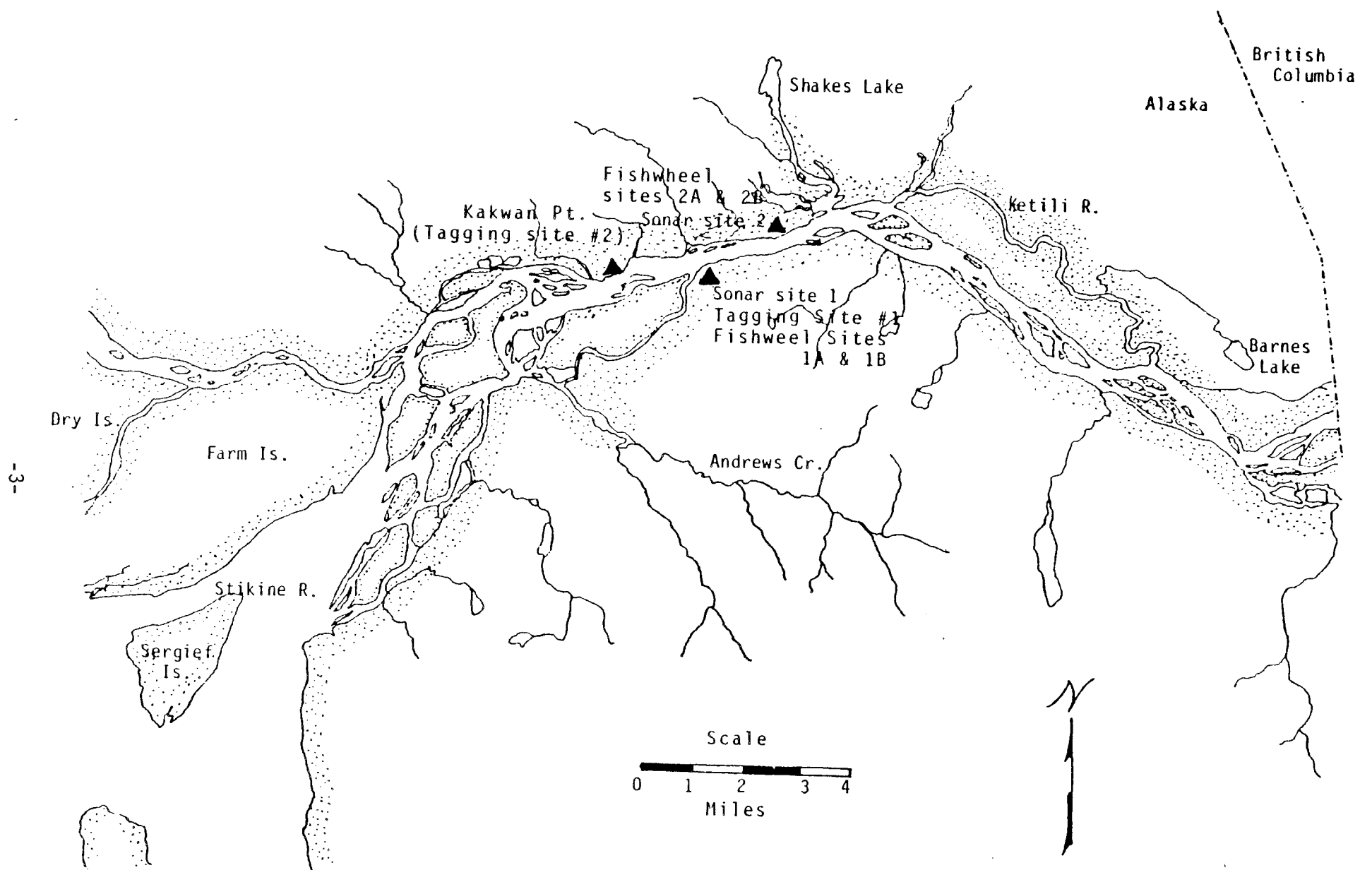


Figure 2. Stikine River gillnet, fishwheel, and sonar sites.

in the Stikine River for in-river population estimation and migration timing. The spaghetti tags were used on pink salmon (*O. gorbuscha*), chum salmon (*O. keta*), chinook salmon (*O. tshawytscha*), and coho salmon (*O. kisutch*) less than 400 mm to examine migratory patterns and assess population sizes. Spaghetti tags were used for their ease of application. The use of jaw tags on chinook, chum, and coho salmon was undertaken as a preliminary study to determine the suitability of this tag for future tagging programs. The Canadian commercial gillnet fishery (the Fishery) was used as the tag recovery location (Figure 3). The results of all tag recoveries can be found in Appendix B.

Sockeye salmon less than 400 mm were not tagged with Petersen disc tags due to their small size, while all pink, chinook, chum, and coho salmon were tagged with spaghetti or jaw tags regardless of size. Preliminary studies conducted on the Stikine River in 1982 showed that untagged coho salmon less than 455 mm represented 0.9% of the Canadian in-river commercial fishery catch, whereas Petersen disc tagged coho salmon less than 455 mm made up 40% of the total tagged fish recaptured in the Fishery due to entanglement of the tags in the nets (Lynch and Edgington 1982). To reduce this Petersen tag-related catch bias during 1983, sockeye and coho salmon less than 400 mm were spaghetti tagged only.

Gill Nets

Set gill nets were fished at three different sites during 1983. The nets were 30.5 m (100 ft) long by 60 meshes deep and were either 13.0 cm (5-1/8 in) or 13.7 cm (5-3/8 in) stretched mesh. Each net was routinely fished nine hours per day and continuously picked so that the fish did not remain entangled in the nets longer than 10-15 minutes. One net was fished at sonar Site #1 (rivermile 16.5) from 3 July to 11 July. Another net was fished at Kakwan Point (rivermile 15.0) from 9 July to 11 July. On 12 July these two nets were moved up to Rock Island (rivermile 23.5) in an attempt to increase the sockeye salmon catch. The Rock Island nets were fished 7 days/week from 12 July to 24 July for sockeye salmon, and again from 18 August to 21 August for coho salmon. All species were tagged identically to those captured in the fishwheels. Netting was discontinued after 21 August due to equipment breakdowns.

Side Scan Sonar

Side scan sonar counters were operated from 18 June - 30 September (Site #1: 18 June - 30 September; Site #2: 20 June - 30 September). As during 1982, the counting sites were located on the south bank at rivermile 16.5 (Site #1) and on the north bank at rivermile 17.5 (Site #2) (Figure 2). Each sonar unit was operated 24 hours/day. Normal operation required monitoring an oscilloscope for 30 minutes every 2 hours, beginning at 12:00 midnight (hour 1). Half-hour scope watches were necessary because the lack of sufficient numbers of migrating fish did not allow calibration of the counter/printer. A 100 fish/hour migration was considered to be the minimum necessary to accurately calibrate the machine (Dave Gaudet, pers. comm.). Each spike on the scope reaching or approaching the threshold energy level was counted as a fish passing through the sonar beam. This procedure was followed from 18 June to 30 September. Counts for the intermediate hours (every even hour)

- * Rock Is.
- ⊙ Glacier Salmon Co.
- A Boathole
- B Fast Eddy
- C Boundary House
- D Sand Pt.
- E Iskut Whirlpool
- F Mouth Iskut
- G Fireboat
- H Pouhle Lumber
- I Choquette
- J JLJ
- K Avalanche
- L Doug's Arm
- M Hole in the Wall

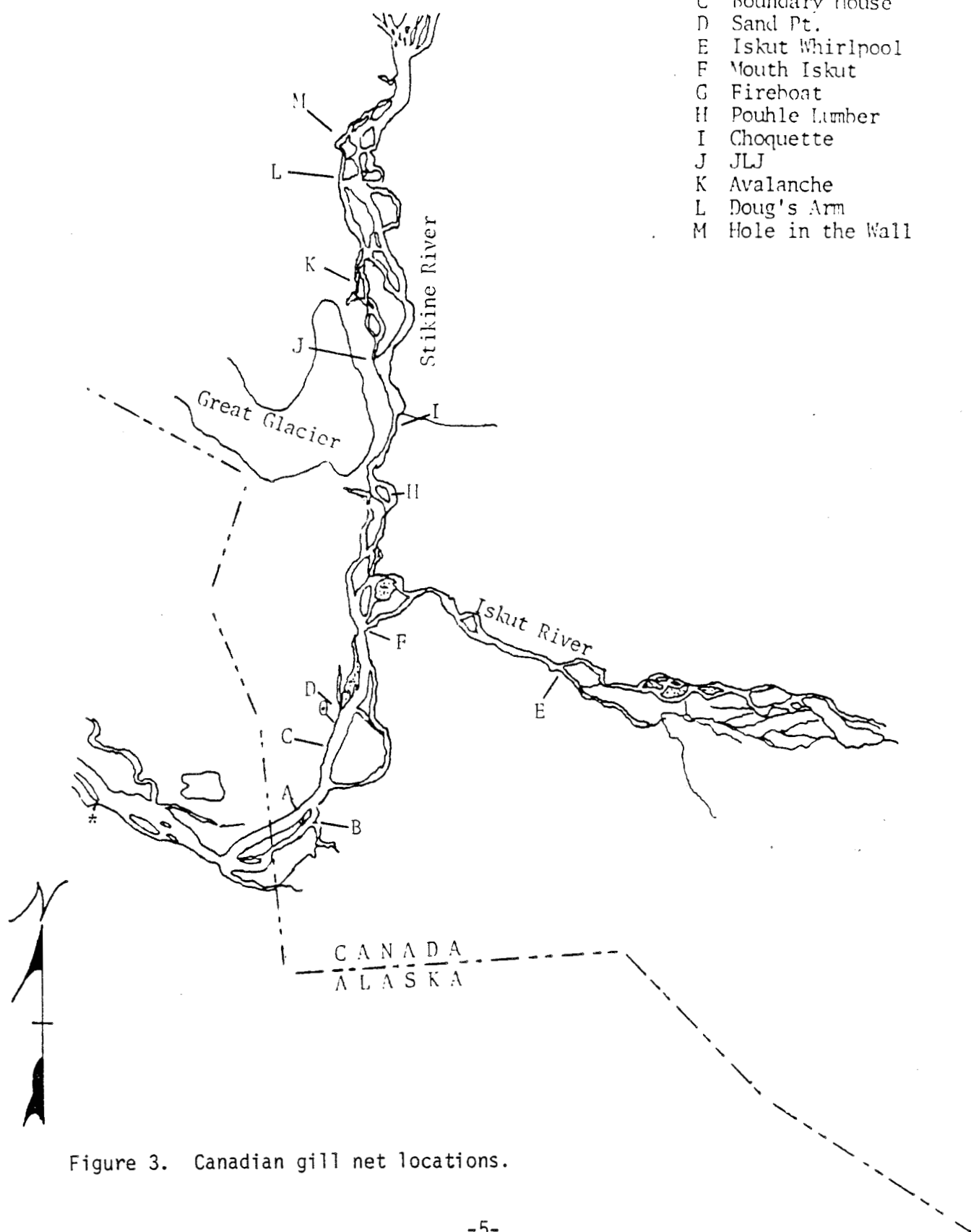


Figure 3. Canadian gill net locations.

were figured to be the average of the counts from the two hours bracketing that hour. Transducers were attached to rotators manufactured by Biosonics, Inc. of Seattle. These were mounted on tripod stands placed in the river so that the transducers were at least 6 inches beneath the water surface (in 1983 the 60-foot targeted substrates were not used). The transducers could then be remotely adjusted horizontally and vertically via a control box located in a counting tent. The vertical adjustment permitted counts to be made at any point in the water column.

The Bendix counter/printer was adjusted to count up to 100 feet from the transducer. During 1982 the machine was set to count out to 60 feet from the transducer to the target at the end of the substrate. The increased counting distance in 1983 permitted the counting of fish migrating farther away from the river bank, as midstream migration was one suspected reason for undercounting fish during 1982.

The counting procedure for Site #1 was changed to account for fish migrating throughout the water column. During 1982, the transducer was aimed along the bottom and remained there throughout the counting period. Due to the slow water current at Site #1 the fish were migrating throughout the water column rather than along the bottom as normally occurs in higher water velocities. During 1983, the rotators allowed viewing three sections for the water column (top, middle, and bottom) and making separate counts for each section. Normally, during each half-hour scope watch, the three sections were viewed for 10 minutes. The counts were expanded based upon the percentage counts obtained from top, middle, and bottom sampling for a 24-hour period each week. The following method was used to expand the Site #1 scope counts to give the total daily count:

Number min/day that the transducers were at a given position/60
= total hrs/day that the transducer remained at this position = A

24 hrs/A = standardized number of hours at a given position = B

Counts made during the time at a given position x B = total count
had the transducer remained at this position for 24 hours.

Total daily count = Top Count + Middle Count + Bottom Count

Example (7/2/83)

Top (9 fish counted) Middle (18 fish) Bottom (12 fish)

120 min/60 = 2 hrs	120/60 = 2 hrs	120/60 = 2 hrs
24 hrs/2 hrs = 12	24/2 hrs = 12	24/2 hrs = 12
9 x 12 = 108 fish	18 x 12 = 216 fish	12 x 12 = 144 fish

Total count for 7/2/83 = 468 fish

The counting procedure for Site #2 remained the same as for 1982 when the transducer remained at the bottom position for 24 hrs/day. The transducer was left at this position because we felt that the majority of fish migrating along the bottom past this site due to the relatively high water velocities.

During 1983, as during 1982, a strong correlation between the time of daily sonar peak counts and the high tide immediately prior to that peak was noted. Because the tides may occur on the day prior to the occurrence of a peak count, the time of the daily peak was adjusted to account for sonar peaks occurring on the day following the previous high tide. To arrive at the adjusted time of the daily peak, the number of hours after midnight that the peak occurred was added to hour 24 (11:00-12:00 p.m.). For example, a peak which occurred at 2:00 a.m. when the tide occurred at 10:00 p.m. the previous day would be assigned hour 26, while the time of the high tide would be assigned hour 22. The daily sonar peak times would encompass hours 1 through 37, while the time of the high tide would include the normal daily hours 1 through 24.

The percent species composition for sonar allocation during 1983 was based upon an adjusted percent fishwheel catch for a 7-day period plus the catch from the Fishery from the week following the actual sonar counts. The fishwheel catches were adjusted to account for their bias toward the capture of pink salmon and the Fishery was not used alone due to its bias toward the capture of sockeye salmon. The two capture methods were combined to reduce the magnitude of the individual biases inherent in both methods. The Fishery opening following the week being allocated was used to allow time for upriver migration between the sonar sites and the Fishery. Preliminary studies conducted in 1982 showed that sockeye salmon required 2-10 days to migrate the distance between the sonar sites and the fishery.

The total Fishery catch was divided by the fishwheel catch to obtain an adjusting factor. The number of fish for each species caught in the fishwheel were then multiplied by this factor. The adjusted fishwheel catch, by species, was then added to the Fishery catches to obtain the total adjusted catches for the allocated week. The percent species composition for the allocated week was then determined from the total adjusted catch (Table 1).

The above methodology does not account for the presence of fish passing through the "shadow" areas of the water column not ensonified by the sonar beam (Figure 4). Another method was developed in 1984 which accounts for these "shadow" areas. This method expands the sonar counts to both time and area. Expansion to area uses the fact that the cross-sectional area of the river counted by the beams (218.25 ft²) is some fraction of the total cross-sectional area of the river utilized by migrating salmon. The counts expanded to a 24-hour period must be further expanded to area by dividing the daily counts by the proportion of the cross-sectional area of the water column being ensonified.

The "shadow" expansion method also uses the species composition of the Canadian fishery only for sonar species allocation (Table 2). This was done to eliminate fishwheel bias towards catching pink salmon and to avoid problems with combining the results of two different capture techniques. However, this method increases the bias toward the counting of sockeye at the expense of other species which are not represented in the commercial fishery catch at the same rate as in the natural populations.

Scale Sampling

During 1983 an intensive scale sampling and tag recovery program was undertaken at the Canadian lower Stikine commercial gillnet fishery (the Fishery).

Table 1. Percent sonar allocation by species based on an adjusted gillnet/fishwheel composition, 1983.

WEEK ENDING	STAT WEEK	RS	KS	PS	CS	SS	SH	DV
JUNE 18	25	33.0%	67.0%	0.0%	0.0%	0.0%	0.0%	0.0%
25	26	27.6%	70.0%	0.0%	0.0%	0.0%	0.0%	2.4%
JULY 2	27	58.5%	41.1%	0.2%	0.0%	0.0%	0.0%	0.2%
9	28	53.5%	13.0%	31.7%	0.1%	0.0%	0.0%	1.8%
16	29	50.3%	2.8%	46.3%	0.1%	0.0%	0.1%	0.5%
23	30	46.9%	1.9%	44.0%	0.4%	.0%	0.2%	6.6%
30	31	45.7%	0.6%	48.1%	1.4%	0.1%	0.8%	3.3%
AUG. 6	32	42.4%	0.7%	48.5%	2.3%	1.1%	1.4%	3.6%
13	33	39.9%	0.1%	45.6%	2.3%	4.2%	2.6%	5.2%
20	34	23.3%	0.4%	44.3%	4.0%	20.2%	2.8%	5.0%
27	35	18.3%	0.0%	35.2%	6.8%	27.5%	3.9%	8.3%
SEPT. 3	36	14.6%	0.0%	20.1%	3.9%	50.0%	4.8%	6.6%
10	37	8.4%	0.0%	16.2%	4.4%	64.4%	2.9%	3.7%
17	38	4.5%	0.0%	8.0%	1.1%	61.1%	2.4%	23.0%
24	39	2.8%	0.0%	0.2%	0.1%	70.3%	5.3%	21.4%
OCT. 1	40	7.1%	0.0%	7.3%	0.2%	81.7%	3.6%	0.0%
8	41	Sonar removed from river						

RS=Sockeye Salmon, KS=Chinook Salmon, PS=Pink Salmon, CS=Chum Salmon, SS=Coho Salmon, SH=Steelhead Trout, DV=Dolly Varden Char

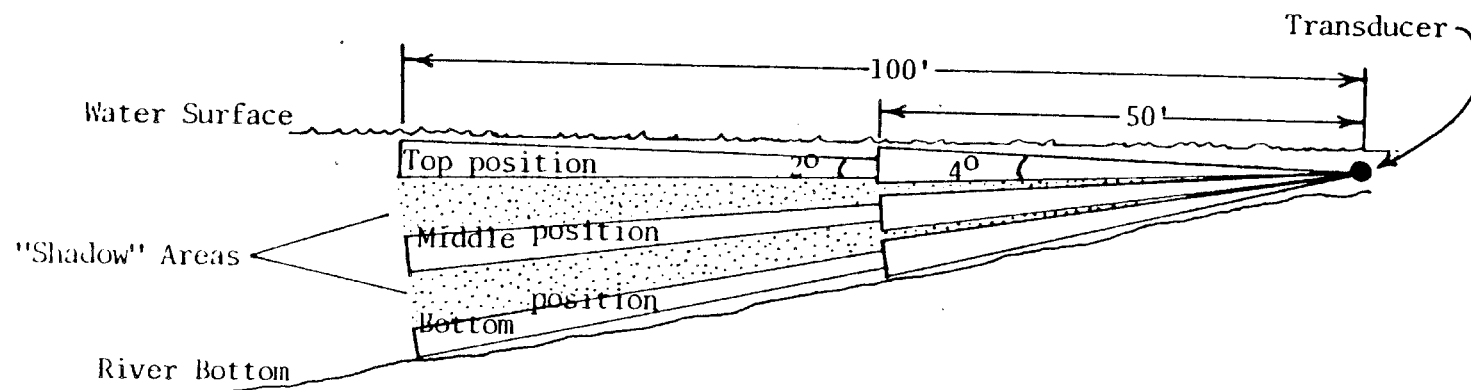


Figure 4. Side view of sonar Site #1 beam locations.

Table 2. Percent species composition of the Canadian commercial fishery, 1983.

WEEK ENDING	STAT WEEK	RS	KS	PS	CS	SS	SH	DV	TOTAL
JUNE 18	25	24.5%	74.5%	0.0%	0.0%	0.0%	1.0%	0.0%	100.0%
25	26	51.4%	48.6%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
JULY 2	27	83.7%	15.5%	0.4%	0.0%	0.0%	0.0%	0.4%	100.0%
9	28	89.1%	8.0%	1.8%	0.1%	0.0%	0.0%	1.0%	100.0%
16	29	90.1%	3.5%	5.1%	0.2%	0.0%	0.1%	1.0%	100.0%
23	30	88.8%	1.4%	6.9%	0.7%	0.1%	0.4%	1.7%	100.0%
30	31	86.8%	0.5%	7.9%	1.2%	0.2%	1.2%	2.2%	100.0%
AUG. 6	32	79.7%	0.5%	9.8%	2.5%	2.1%	2.6%	2.8%	100.0%
13	33	77.2%	0.1%	5.1%	2.5%	7.5%	5.1%	2.5%	100.0%
20	34	44.9%	0.5%	4.5%	3.5%	39.1%	5.6%	1.9%	100.0%
27	35	29.6%	0.0%	2.4%	3.0%	50.6%	7.4%	7.0%	100.0%
SEPT. 3	36	17.0%	0.1%	0.8%	3.0%	66.0%	9.7%	3.4%	100.0%
10	37	5.5%	0.0%	0.4%	2.3%	84.1%	5.9%	1.8%	100.0%
17	38	1.1%	0.1%	0.3%	0.6%	89.7%	4.8%	3.4%	100.0%
24	39	0.5%	0.5%	0.4%	0.2%	92.6%	5.2%	0.6%	100.0%
OCT. 1	40	0.0%	0.0%	0.4%	0.5%	91.9%	7.2%	0.0%	100.0%
8	41	0.7%	0.0%	0.7%	0.0%	85.0%	13.6%	0.0%	100.0%

RS=Sockeye Salmon, KS=Chinook Salmon, PS=Pink Salmon, CS=Chum Salmon, SS=Coho Salmon, SH=Steelhead Trout, DV=Dolly Varden Char

Scales were collected from all sockeye salmon sampled for age, weight, and length. Chinook, chum, and coho salmon were sampled as time and logistics permitted. All scale samples were collected according to standard scale sampling techniques (INPFC 1963). One ADF&G biologist, and one Canadian biologist, employed by LGL, Limited, were stationed at Great Glacier Salmon Company during each fishery opening from 15 June to 15 September (Figure 3). The biologists were primarily responsible for collecting scales from sockeye salmon caught in the fishery, Petersen disc tag recovery, tabulation of fishery catch statistics, and collecting sockeye salmon egg diameter data.

Some minor discrepancies (300 total sockeye salmon) exist between the catch statistics taken daily by the Stikine Project personnel stationed at the Fishery and the statistics published by the Canadian Department of Fisheries and Oceans. We believe that the statistics collected by our biologists and presented here are correct and that an error was made in the compilation of the Canadian statistics. The results of the Canadian catch statistics are presented in Appendix F.

Tag Recovery and Population Estimates

The Fishery sockeye salmon catches were sampled for Petersen disc tags to calculate a Petersen population estimate. The fishery occurred for 20 miles along the lower Stikine River from rivermile 31 to 51 (Figure 3). Seven to ten nets 30.5 m (100 ft) long of 13.7 cm (5-3/8 in) to 14.6 cm (5-3/4 in) stretched mesh gill nets were normally fished during 4-day openings. In order to avoid combining the two different sampling methods, fishwheel and gill net, only tags applied via gill nets at the Rock Island tagging site and recovered in the Fishery were used to estimate the sockeye salmon population size.

Gillnet selectivity was not calculated for population estimation. The gill nets used for tagging were hung at a 3:1 hanging ratio (three meshes of web per one stretched mesh distance of cork and lead line) in order to entangle, rather than actually gill a majority of the fish. This was done to reduce mortalities due to net induced gill damage. The numbers of sockeye salmon entangled and gilled were not recorded. Selectivity of the Fishery nets also was not determined due to variability in the mesh sizes and hanging ratio used, lengths of individual nets fished, and the lack of data as to whether or not the fish were gilled or entangled. Due to selectivities not being calculated all population estimates based upon gill net captured sockeye salmon should be considered to be conservative and the population size to be at or near the upper end of the calculated 95% confidence limits.

Tags were also recovered at the upper river commercial and subsistence fisheries and at the Tahltan Lake sockeye salmon weir, operated by the Canadian Department of Fisheries and Oceans (CDFO). Upper river sites were not used for population estimates due to the difficulty of tag recovery at these remote locations.

The sockeye salmon population estimate (\hat{N}) and the 95% confidence intervals, calculated by the formulas presented in Robson and Regier (1971) were:

$$\hat{N} = mc/r, \text{ the 95\% confidence interval for the estimate is}$$

$$\hat{N} \pm 1.96 \times \text{S.E.}(\hat{N})$$

and:

$$\text{S.E.}(\hat{N}) = \hat{N} \sqrt{\frac{(N-m)(N-c)}{mc(N-1)}}$$

where:

m = the total number of tagged fish in the population

c = the number of fish examined for tags

r = the total number of tagged fish recovered

S.E.(\hat{N}) = standard error of the estimate (\hat{N})

Scale Pattern Analysis

Escapement estimates for Stikine River sockeye salmon have been developed utilizing the analysis of scale patterns. The number of circuli formed during freshwater growth are used to determine stock origin. Both McCart (1982) and Oliver (1983) independently determined from 1982 data that the Tahltan Lake sockeye salmon stock and the mainstem sockeye salmon stocks elicit different freshwater scale patterns. McPherson (1983) showed that age 1.2 demonstrated the same characteristics as age 1.3 fish and that the combined circuli count for the first two freshwater years could be used to determine the stock origin for fish aged 2.2 and 2.3.

The sockeye salmon scales collected at the fishery were separated into Tahltan and mainstem stocks by the number of circuli in the freshwater growth zone (the regional Stock Biology group of Commercial Fisheries Division was responsible for counting the freshwater circuli and aging the scales). Based upon the scale characteristics we apportioned the fishery catch by stock by weekly fishing period. This was done to prevent biasing the overall stock composition due to the sampling of a different percentage of each week's catch (Appendix D). If we assume that the stock composition of the samples is representative of the entire catch, then the percentage of the catch sampled does not need to be constant.

The total upriver escapement and mainstem escapement were estimated using the proportion of Tahltan fish caught in the lower river fishery and the escapement of Tahltan fish past the fishery. The mainstem escapement, based on freshwater scale patterns, was estimated by the formula presented by McPherson (1983), where:

$$E_m = \frac{(E_t)(C_m)}{(C_t)}$$

and the total upriver sockeye return can be estimated by the formula:

$$\hat{N} = E_m + E_t + C_m + C_t$$

where:

- \hat{N} = Total sockeye population estimate
- E_m = Escapement of mainstem stocks
- E_t = Escapement of Tahltan fish past the lower fishery
- C_m = Catch of mainstem fish in the lower fishery
- C_t = Catch of Tahltan fish in the lower fishery

Egg Diameter Analysis

A population estimation and stock separation study was undertaken in conjunction with LGL, Ltd. (Canadian consultants for CDFO) that used egg diameters to separate the adult sockeye salmon stocks harvested in the fishery into Tahltan or mainstem stocks. Egg diameters, and standard age, weight, and lengths were obtained using the methods presented in Craig (1985).

RESULTS

Fishwheels

A total of 2,069 fish were captured in the fishwheels during 1985 (Table 3). These included 35 chinook salmon, 99 sockeye salmon, 1,576 pink salmon, 61 chum salmon, 98 coho salmon, 197 Dolly Varden char, and 3 steelhead trout (*Salmon gairdneri*). From these captures a total of 1,599 salmon were tagged and released. These included 30 chinook salmon, 68 sockeye salmon, 1,347 pink salmon, 57 chum salmon, and 97 coho salmon. All sockeye and coho salmon longer than 400 mm were tagged with a 7/8 inch, orange Petersen disc tag.

Gill Nets

A total of 864 salmon were captured and tagged via use of gillnets. These included 711 sockeye salmon, 36 chinook salmon, 20 chum salmon, 55 pink salmon, and 42 coho salmon. The Rock Island gillnet site accounted for 652 sockeye salmon and all the other gillnetted fish captured during 1983, except for 5 chinook salmon which were caught in the nets at site no. 1 and Kakwan Point. The gill nets were moved to Rock Island on 12 July where the catches were 25-100 sockeye/net/day compared to 10 sockeye/net/day caught in nets at site no. 1 and Kakwan Point.

Side Scan Sonar

During 1983 the counting range was increased to 100 feet, from the 60 ft range used during 1982. The analysis of each of the sixteen 6.25 ft long sonar sectors, located along the sonar beam, showed that fish do migrate farther than 60 ft offshore (Tables 4 and 5), however, the decreasing percentage of fish migrating through successive sectors beyond sector suggests that the majority of the fish migrated within the 100 ft sonar counting range.

Table 3. Stikine River fishwheel catches by species, by week, 1983.

WEEK ENDING	STAT WEEK	RS	KS	PS	CS	SS	SH	DV	TOTAL
JUNE 18	25	1	9	0	0	0	0	1	11
25	26	1	6	0	0	0	0	0	7
JULY 2	27	3	4	13	0	0	0	1	21
9	28	14	3	65	0	0	0	0	82
16	29	6	3	108	0	0	0	14	131
23	30	19	2	224	4	0	0	20	269
30	31	8	3	346	7	0	1	21	386
AUG. 6	32	16	1	349	13	4	0	41	424
13	33	5	0	328	15	2	0	23	373
20	34	2	2	88	6	7	0	9	114
27	35	4	2	16	9	10	0	10	51
SEPT. 3	36	6	0	22	5	28	0	3	64
10	37	12	0	12	2	32	0	45	103
17	38	1	0	5	0	14	1	7	28
24	39	1	0	0	0	0	0	0	1
OCT. 1	40	0	0	0	0	1	1	2	4
8	41	Fishwheels not fished.							0
TOTAL		99	35	1,576	61	98	3	197	2,069

RS=Sockeye Salmon, KS=Chinook Salmon, PS=Pink Salmon, CS=Chum Salmon, SS=Coho Salmon,
SH=Steelhead Trout, DV=Dolly Varden Char

Table 4. Sonar #1, counts by sector, 1983.

SECTOR	COUNTS PER SECTOR	PERCENT OF TOTAL COUNTS
1	408	7.4%
2	460	8.3%
3	492	8.9%
4	437	7.9%
5	297	5.4%
6	327	5.9%
7	314	5.7%
8	499	9.0%
9	566	10.3%
10	465	8.4%
11	258	4.7%
12	290	5.3%
13	228	4.1%
14	206	3.7%
15	164	3.0%
16	108	2.0%
TOTALS	5,519	100.0%

Table 5. Sonar #2, counts by sector, 1983.

SECTOR	COUNTS PER SECTOR	PERCENT OF TOTAL COUNTS
1	392	11.0%
2	460	12.9%
3	413	11.5%
4	336	9.4%
5	271	7.6%
6	262	7.3%
7	301	8.4%
8	346	9.7%
9	272	7.6%
10	204	5.7%
11	135	3.8%
12	74	2.1%
13	50	1.4%
14	30	0.8%
15	23	0.6%
16	10	0.3%
TOTALS	3,579	100.0%

The total cumulative count of all species combined for the operational period was 79,975 (not expanded for area) (Table 6). Expanding for area at Site #1 and Site #2 the total count yielded 127,961 fish (Table 7).

Two major escapement peaks occurred during 1983 (Figures 5 and 6). The first peak occurred between 15 July and 7 August, which corresponded with the peak catches of sockeye and pink salmon in the Canadian lower river fishery (Table 8). The second peak occurred between 30 August and 3 September, which corresponded with rapidly increasing catches of coho salmon in the Fishery. The greatest number of counts for all species combined occurred between 30 June and 11 August.

As in 1982, no correlation between total daily sonar counts and mean daily river flow at the U.S.G.S. "Wrangell" gauging station, could be demonstrated. However, a strong correlation was shown between time of daily sonar peak counts and the high tide immediately prior to that peak (Figure 7). The regression equations for both sites are as follows:

$$\text{Site \#1: } +P = 1.11 (tHt) = 4.09 \quad r^2 = .85 \quad n = 99$$

$$\text{Site \#2: } +P = .85 (tHt) = 7.28 \quad r^2 = .73 \quad n = 88$$

where tP is the time of the daily peak and tHt is the time of the high tide prior to the daily peak.

Sockeye Salmon:

The total sonar counts allocated by adjusted fishwheel catches for sockeye salmon was 26,040 (Table 6). Sockeye were present and counted in the Stikine system from 19 June to 27 September. The major portion of the sockeye run occurred between 20 June and 11 August, with the major peaks occurring on 18 July and 4 August (Figure 5).

The allocated count, expanded for river cross sectional area, for sockeye salmon was 72,785 (Table 7). The timing of the seasonal peaks was the same as for the fishwheel allocation but the magnitude of the peaks were much greater.

Chinook Salmon:

The total sonar counts, allocated by adjusted fishwheel catches for chinook salmon was 4,051 fish (Table 6). Chinook salmon were counted from 18 June to 19 July, with the peak counts occurring near the end of June (Figure 6). The allocated count, expanded for area, was 4,363 chinook (Table 7). The sonar counts based on the two methods were within 21-26% of the total estimated escapement based on index escapement counts for the Tahltan River system. The index estimate plus the Fishery harvest totaled 3,193. The index counts are taken on the Little Tahltan River only which is assumed to support 25% of the spawning population of the Stikine River chinook salmon spawning population (Paul Kissner, ADF&G Sport Fish, Douglas, AK, Pers. Communication).

Table 6. Stikine River sonar counts by species and week, based on Canadian fishery and fishwheel catches, not adjusted for "shadow" areas, 1983.

WEEK ENDING	STAT WEEK	RS	KS	PS	CS	SS	SH	DV	TOTAL COUNTS
JUNE 18	25	30	61	0	0	0	0	0	91
25	26	482	1,221	0	0	0	0	42	1,745
JULY 2	27	2,336	1,641	8	0	0	0	8	3,993
9	28	2,784	676	1,648	3	0	0	92	5,203
16	29	3,096	172	2,851	7	0	4	30	6,160
23	30	3,767	151	3,529	30	4	16	531	8,028
30	31	3,164	41	3,330	98	7	53	227	6,920
AUG. 6	32	3,902	62	4,466	209	97	132	335	9,203
13	33	2,547	9	2,910	149	271	164	331	6,381
20	34	1,093	17	2,076	188	944	133	232	4,683
27	35	597	0	1,150	223	901	127	273	3,271
SEPT. 3	36	1,384	0	1,903	370	4,737	458	623	9,475
10	37	452	0	870	235	3,470	158	200	5,385
17	38	170	0	305	41	2,331	91	879	3,817
24	39	108	0	7	4	2,690	201	818	3,828
OCT. 1	40	128	0	131	4	1,464	65	0	1,792
8	41	Sonar removed from river.							
TOTALS		26,040	4,051	25,184	1,561	16,916	1,602	4,621	79,975

RS=Sockeye Salmon, KS=Chinook Salmon, PS=Pink Salmon, CS=Chum Salmon, SS=Coho Salmon, SH= Steelhead Trout, DV=Dolly Varden Char

Table 7. Stikine River sonar counts, based on Canadian fishery species composition, adjusted for "shadow" areas, 1983.

WEEK ENDING	STAT WEEK	RS	KS	PS	CS	SS	SH	DV	TOTAL COUNTS
JUNE 18	25	98	297	0	0	0	4	0	399
25	26	1,651	1,558	0	0	0	0	0	3,209
JULY 2	27	5,770	1,070	27	0	0	0	27	6,894
9	28	7,143	644	147	8	0	0	77	8,019
16	29	9,619	372	543	23	0	13	105	10,675
23	30	11,352	185	878	95	11	50	213	12,784
30	31	9,902	60	896	135	23	135	256	11,408
AUG. 6	32	12,006	82	1,477	377	316	387	428	15,070
13	33	7,356	10	486	238	717	487	238	9,528
20	34	2,948	31	293	232	2,562	370	123	6,560
27	35	1,665	0	135	169	2,846	416	394	5,624
SEPT. 3	36	2,707	16	127	478	10,511	1,545	541	15,926
10	37	475	0	30	201	7,205	506	152	8,570
17	38	52	3	16	30	4,322	229	166	4,817
24	39	33	33	26	13	6,090	342	39	6,577
OCT. 1	40	0	0	8	10	1,747	137	0	1,901
8	41	Sonar removed from river.							
TOTALS		72,777	4,362	5,089	2,008	36,350	4,623	2,760	127,961

RS=Sockeye Salmon, KS=Chinook Salmon, PS=Pink Salmon, CS=Chum Salmon, SS=Coho Salmon,
SH=Steelhead Trout, DV=Dolly Varden Char

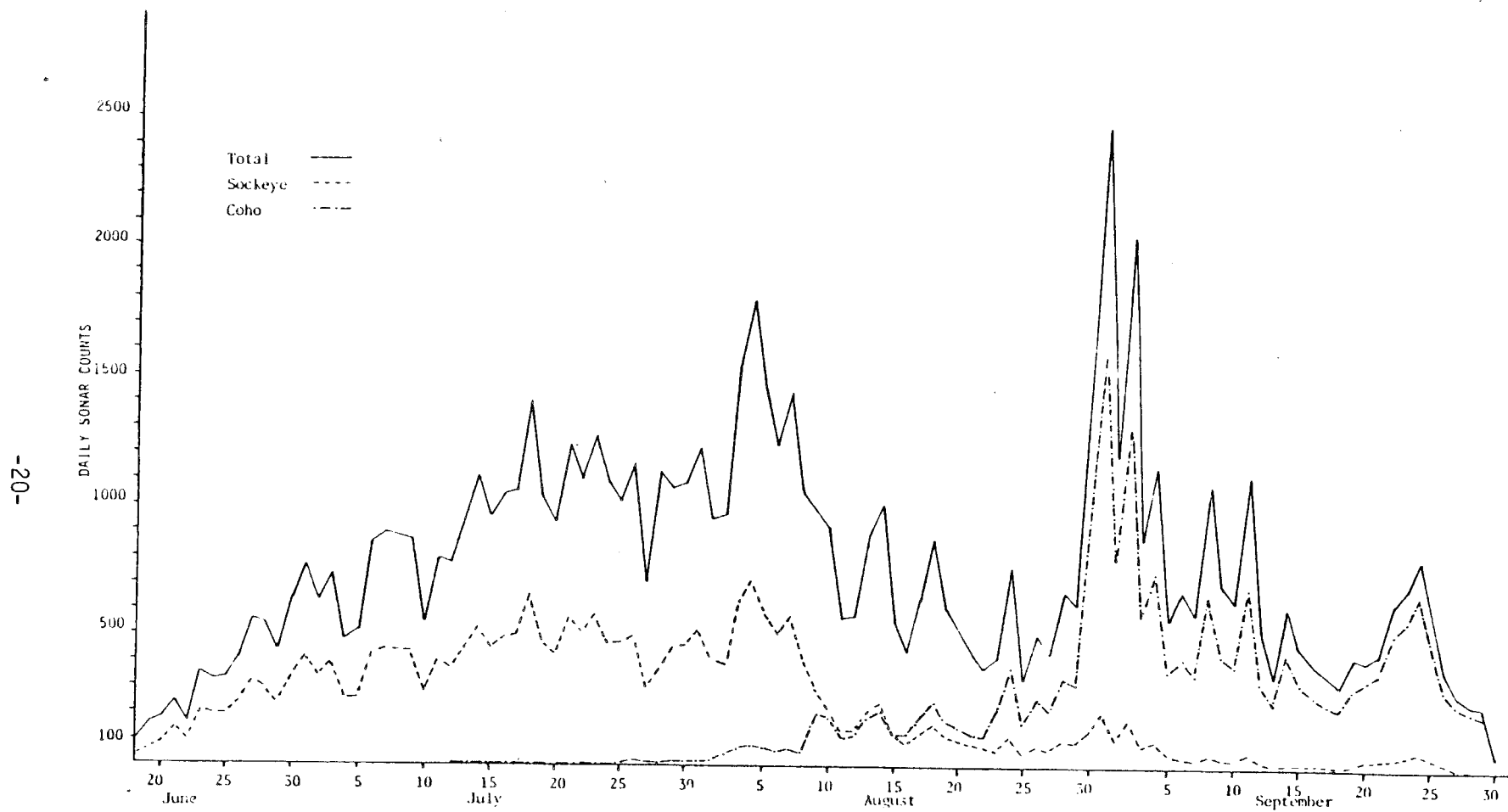


Figure 5. Sockeye, coho, and total salmon sonar counts for sonar Sites #1 and #2 combined, 1983.

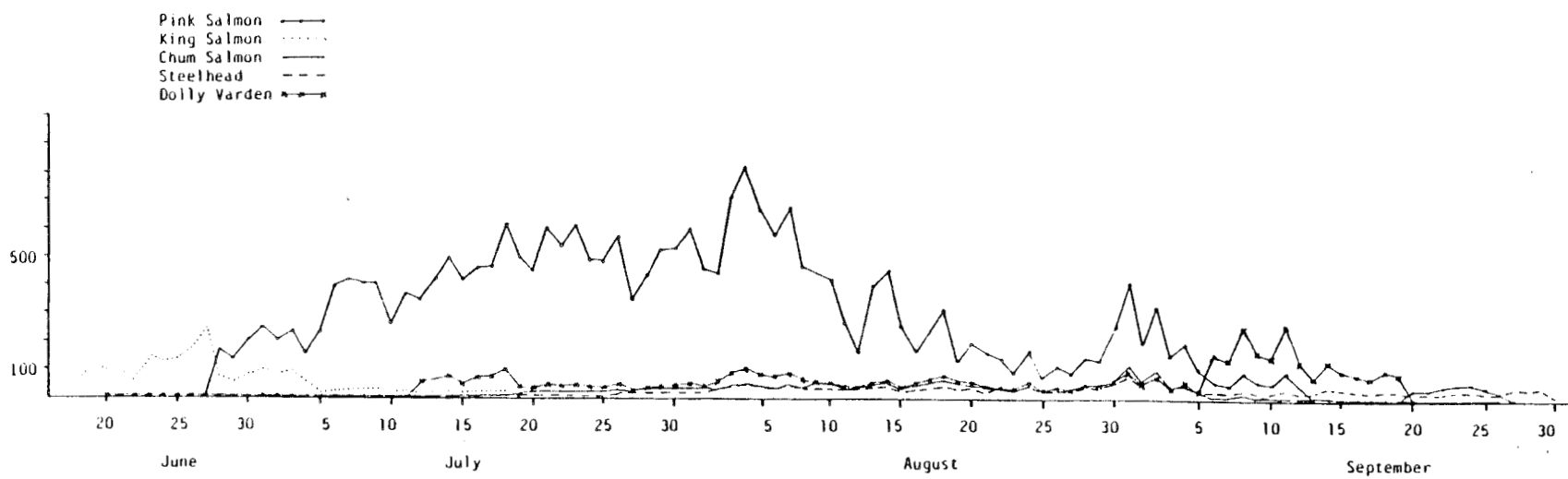


Figure 6. Stikine River sonar counts, by species, for sonar Sites #1 and #2 combined, 1983.

Table 8. Canadian lower Stikine River commercial fishery catches, 1983.

WEEK ENDING	STAT WEEK	RS	KS	PS	CS	SS	SH	DV	TOTAL CATCH
JUNE 18	25	45	137	0	0	0	2	0	184
25	26	179	169	0	0	0	0	0	348
JULY 2	27	1,078	200	5	0	0	0	5	1,288
9	28	2,771	250	57	3	0	0	30	3,111
16	29	2,925	113	165	7	0	4	32	3,246
23	30	2,030	33	157	17	2	9	38	2,286
30	31	2,631	16	238	36	6	36	68	3,031
AUG. 6	32	2,049	14	253	63	54	66	73	2,572
13	33	1,314	2	87	40	128	87	43	1,701
20	34	191	2	19	15	166	24	8	425
27	35	100	0	8	10	171	25	24	338
SEPT. 3	36	146	1	7	25	566	83	29	857
10	37	78	0	5	33	1,182	83	25	1,406
17	38	23	1	7	13	1,904	101	73	2,122
24	39	5	5	4	2	987	55	7	1,065
OCT. 1	40	0	0	3	4	733	58	0	798
8	41	1	0	1	0	130	21	0	153
TOTAL		15,566	943	1,016	268	6,029	654	455	24,931

RS=Sockeye Salmon, KS=Chinook Salmon, PS=Pink Salmon, CS=Chum Salmon, SS=Coho Salmon,
SH=Steelhead Trout, DV=Dolly Varden Char

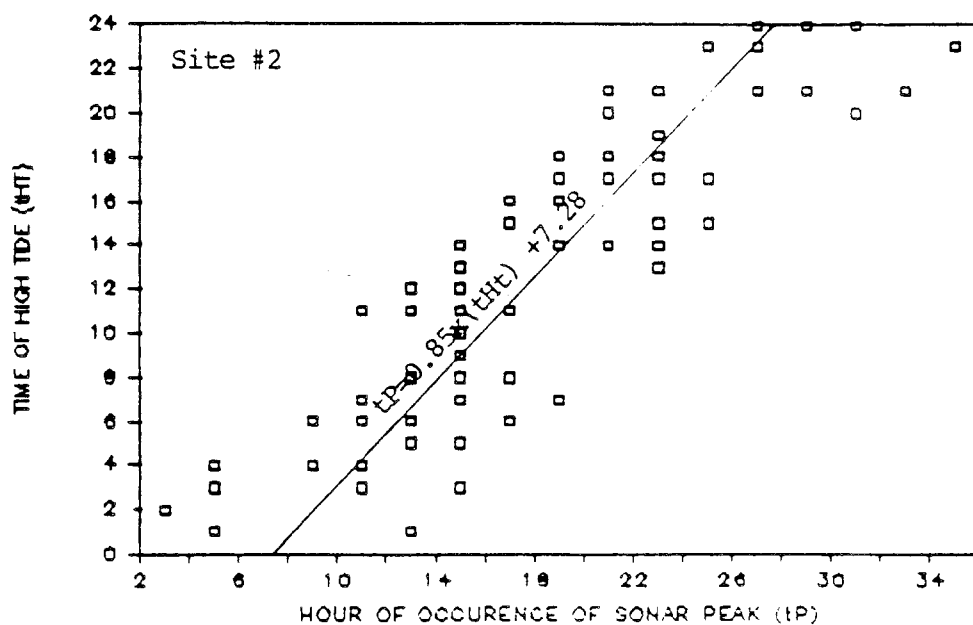
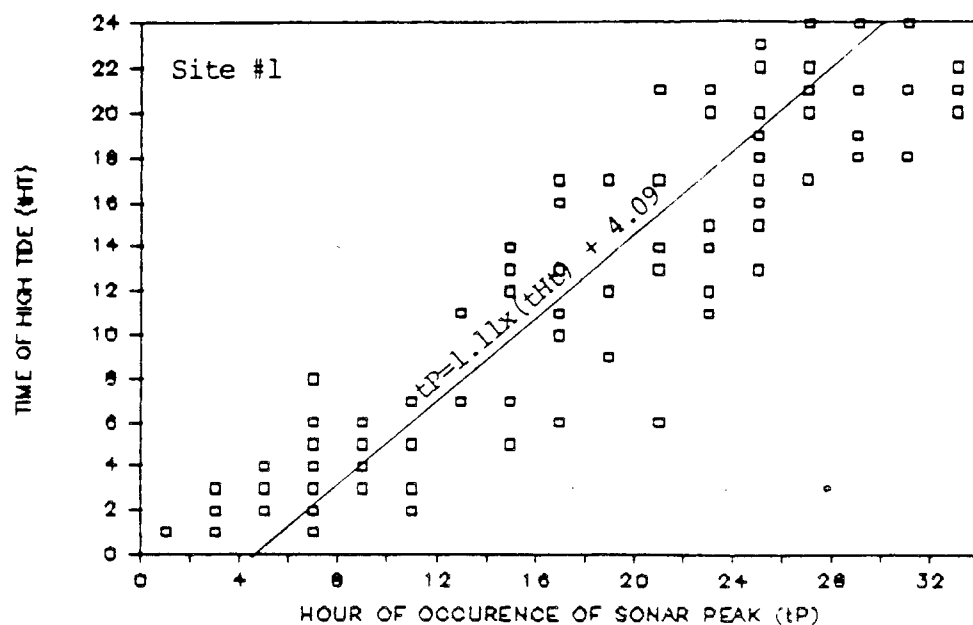


Figure 7. Relationship between high tide and daily sonar peaks for sonar Sites #1 and #2, 1983.

Pink Salmon:

The total sonar count, allocated by adjusted fishwheel catches, for pink salmon was 25,184 fish (Table 6). Pink salmon were present in the Stikine from 28 June to 27 September. The major portion of the migration occurred from 28 June to 23 August (Figure 6). The area expansion method gave a total pink salmon count of 5,094 (Table 7).

This count is probably much too low. If only 5,092 fish were counted via sonar then the fishwheel capture efficiency (1,576 pink salmon) would have been 31%. Based on the low numbers of fishwheel-tagged pink salmon recovered in the Fishery (37 out of 1,016 total pink salmon caught or 3.6%) such a fishwheel capture efficiency appears to be much too high (Appendix B).

Chum Salmon:

The total sonar count, allocated by adjusted fishwheel catches, for chum salmon was 1,561 fish (Table 6). Chum salmon were counted from 5 July to 27 September with no true peak in evidence (Figure 6). The area expansion method gave a total chum salmon count of 1,970 (Table 7). Both of these counts more closely estimated the total 1983 escapement than in 1982 when the total chum salmon sonar allocation was less than the in-river Canadian gillnet catch. The use of four fishwheels probably increased the capture efficiency for chum salmon and therefore was reflected in the total counts.

Coho Salmon:

The total sonar count, allocated by adjusted fishwheel catches, for coho salmon was 16,916 fish (Table 6). Coho salmon were counted between 12 July to 30 September with the peak counts occurring between 31 August and 3 September (Figure 5). The area expansion method gave a total count for coho at 36,361 (Table 5). The true count probably lies between these two estimates.

It appears that severe undercounting of coho did not occur during 1983. The Canadian harvest of coho totaled 6,029 (Table 8). The use of four fishwheels increased the coho capture efficiency which was low in 1982 (Edgington & Lynch 1982). Increased capture efficiency, the increased sonar counting range, and multi-level counting at Site #1 appears to have increased our ability to effectively enumerate Stikine coho.

Dolly Varden Char:

The total sonar count, allocated by adjusted fishwheel catches, for Dolly Varden char was 4,621 (Table 6), down significantly from the 1982 count (12,557). The area expansion method counted 2,769 Dolly Varden for 1983 (Table 5). The Fishery does not harvest many Dolly Varden and this is reflected in the sonar counts using this method. Dolly Varden were counted from 20 June to 20 September with the peak counts occurring between 5 September and 20 September (Figure 6).

Steelhead Trout:

The total sonar count, allocated by adjusted fishwheel catches for steelhead trout was 1,602 (Table 6). The steelhead counts, adjusted for area, were 4,619 fish (Table 7). The fishwheels were ineffective for catching steelhead (only 3 were caught) so this severely biased the sonar counts downward for this species. The Fishery appears to be quite effective at catching steelhead (654 fish) and so the sonar counts, allocated by the Fishery catches only, would reflect this high catch efficiency.

Population Estimation

Population size was estimated through analysis of tag recaptures, scale patterns, and egg diameters, as follows.

Mark-Recapture:

Tag collection efforts resulted in the recovery of 192 secondary and 50 primary Petersen disc tags, 48 spaghetti tags, and 11 jaw tags. Of the secondary Petersen disc tags recovered, 157 had been attached at the Rock Island tagging site (Appendix B).

Petersen population estimates obtained from the mark-recapture tagging gave a total inriver sockeye salmon escapement of $64,619 \pm 8,763$, where 652 sockeye salmon were tagged at Rock Island, the number of sockeye salmon examined for tags at the Fishery was 15,560, and the number of tagged sockeye salmon recovered in the Fishery was 157.

Scale Pattern Analysis:

During the sampling period 2,579 sockeye salmon scales were collected at the Fishery, with 1,960 being satisfactory for scale pattern analysis and age analysis. In addition to the sockeye salmon scales, 77 chum salmon, 371 chinook salmon, and 500 coho salmon scale samples were also collected.

The sockeye salmon stock composition in the Fishery, based on the analysis of scale patterns was determined to be 46.8% Tahltan and 53.2% mainstem fish (Table 9). The upriver (above the Fishery) escapement estimate of mainstem stocks was 29,495 fish, the Tahltan escapement estimate was 25,993, and the total sockeye salmon return to the Canadian portion of the Stikine River was estimated at 71,574 (Table 10). The total escapement estimate includes the Fishery catches (Table 8) and assumes that the stock composition of the combined catch of 5,263 sockeye salmon from the upper river commercial (614 fish) and subsistence (4,649 fish) catches was comprised of 90% Tahltan stock and 10% mainstem stocks (McPherson 1983).

Egg Diameter Analysis:

The egg diameter analysis estimated the total sockeye salmon return at between 61,000-71,000 fish, where 45%-53% were Tahltan stock and 47%-55% were of mainstem stocks. Females caught in the Fishery contained either small or large eggs of diameters of 2.3-3.2 mm or 3.8-5.4 mm, respectively. The sockeye

salmon containing small eggs were assumed to be of Tahltan origin, while the sockeye salmon with large eggs were assumed to be of mainstream origin (Craig 1985).

Table 11 summarizes the results of the four population estimation and stock separation methods utilized during 1983.

Adult Migration

Run timing based upon scale pattern analysis showed that 50% of the Tahltan Lake stock had passed through the fishery by 11 July (Figures 8 and 9), and 50% had passed through the Tahltan Lake weir by 22 July (Appendix E). Therefore, the Tahltan fish should travel from the fishery to the weir in approximately 11 days. If 50% of the total Tahltan escapement went through the weir by 22 July then approximately 50% of the Tahltan stock caught in the Fishery must have been caught by 11 July. Since 59.1% of the total sockeye salmon were caught by 21 July (Appendix Table C-1) it is likely that the Fishery did harvest Tahltan-bound sockeye salmon throughout the entire Tahltan run and significant differential harvesting of mainstream stocks did not occur.

If the mean number of days required to travel to the weir is 11 days, and the Fishery is from 118 to 128 miles below the weir, then the migration rate of Tahltan-bound sockeye salmon is from 10.7 to 11.6 miles per day. Bell (1973) showed that such a sustained swimming speed is well within the cruising speed of 0-57 miles per day expected for adult sockeye salmon.

DISCUSSION

The close agreement between the three methods of population estimation--tagging, scale pattern analysis, and egg diameter analysis--which were conducted independently of each other, corroborates the assumption of a large sockeye salmon spawning population occurring outside the Tahltan Lake system. Such close agreement also reinforces the usefulness and accuracy of each of these methods for population size and run timing estimation.

The results of the sonar methodologies reported here represent only two out of several possible counting schemes that may be used. Two additional counting and allocation possibilities were explored after the 1983 field season was concluded. These schemes included: (1) species allocation of the sonar counts based on the Canadian fishery but not accounting for "shadow" areas (Table 12) and (2) species allocation of the sonar counts based on fishwheel counts only and accounting for the "shadow" areas (Table 13). Other methods may also be possible using the available sampling data.

The uncertainties associated with escapement estimates obtained via side scan sonar creates doubts as to the ability of sonar counts to accurately count adult migrating salmon in the Stikine River. Use of gillnet catches, adjusted for selectivity, for species apportionment may give counts which are in closer agreement with other population estimation methods. However, the use of gillnets, even with selectivity adjustments, may not give accurate species composition due to the inability of the gill nets to capture any fish of a size

Table 9. Sockeye salmon stock composition of the Canadian lower Stikine River commercial gillnet fishery, 1983.

WEEK ENDING	TAHLTAN LAKE STOCK	MAINSTEM STOCKS	TOTAL CATCH
JUNE 18	45	0	45
25	149	30	179
JULY 2	929	149	1,078
9	2,303	468	2,771
16	1,805	1,120	2,925
23	980	1,050	2,030
30	631	2,000	2,631
AUG. 6	277	1,772	2,049
13	145	1,169	1,314
20	18	173	191
27	2	93	95
SEPT. 3	3	143	146
10	2	76	78
17	0	23	23
24	0	5	5
TOTALS	7,289	8,271	15,560
PERCENT	46.8%	53.2%	100.0%

Table 10. Upper Stikine sockeye salmon return estimates by stock, based on scale pattern analysis, 1983.

Fishery Catches and Weir Counts	Tahltan Lake Stock	Mainstem Stocks	Total
Lower Fishery Catch	7,289	8,271	15,560
Upper River Commercial Catch ¹	553	61	614
Subsistence Catch ¹	4,184	465	4,649
Tahltan Weir Count ²	21,256	N/A	21,256
Mainstem Escapement Estimate	N/A	29,495	29,495
Totals	33,282	38,292	71,574

¹ Catch composition assumed to be 90% Tahltan, 10% Mainstem.

² Appendix E

Table 11. Stikine River sockeye salmon inriver population estimates by estimation method, 1983.

ESTIMATION METHOD	INRIVER POPULATION ESTIMATES		
	TAHLTAN STOCK	MAINSTEM STOCKS	TOTAL
SIDE SCAN SONAR			
Fishwheel Allocated ¹	N/A	N/A	26,040
Fishery Allocated ²	N/A	N/A	72,785
PETERSEN MARK-RECAPTURE	N/A	N/A	64,619
SCALE PATTERN ANALYSIS	33,282	38,292	71,574
EGG DIAMETER ANALYSIS ³	32,340	33,660	66,000

¹ Species allocation based on an adjusted fishwheel Canadian fishery catch.

² Species allocation based on the Canadian gillnet fishery catch only with the sonar counts adjusted for the area of the water column not ensonified.

³ The estimates given here are the midpoints of the estimates obtained by the egg diameter analysis technique.

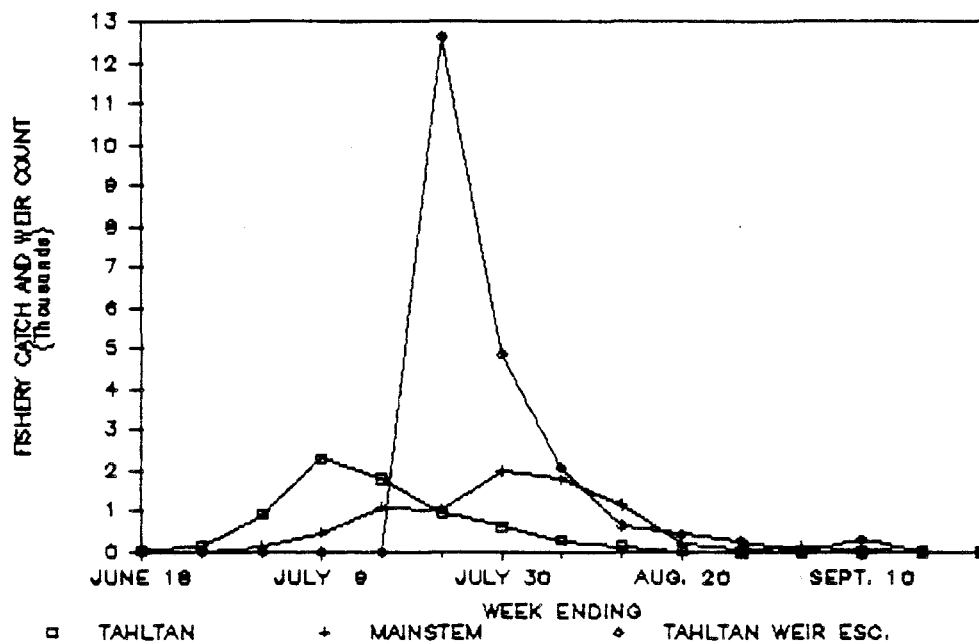


Figure 8. Sockeye salmon stock run timing into the Canadian lower Stikine River commercial gillnet fishery and the weekly counts at the Tahltan Lake weir, 1983.

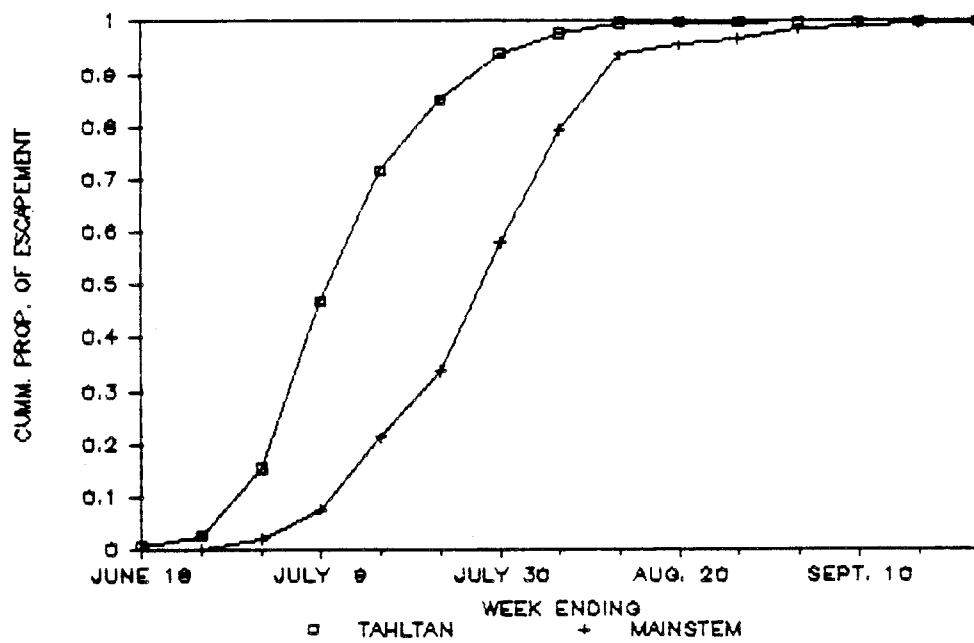


Figure 9. Cumulative percent lower Stikine River sockeye salmon stock escapement, 1983.

Table 12. Stikine River sonar counts, by species, based on Canadian fishery species composition, not adjusted to the "shadow" areas, 1983.

WEEK ENDING	STAT WEEK	RS	KS	PS	CS	SS	SH	DV	TOTAL COUNTS
JUNE 18	25	22	68	0	0	0	1	0	91
25	26	898	847	0	0	0	0	0	1,745
JULY 2	27	3,342	620	16	0	0	0	16	3,993
9	28	4,634	418	95	5	0	0	50	5,203
16	29	5,551	214	313	13	0	8	61	6,160
23	30	7,129	116	551	60	7	32	133	8,028
30	31	6,007	37	543	82	14	82	155	6,920
AUG. 6	32	7,332	50	902	230	193	236	261	9,203
13	33	4,926	6	325	160	480	326	160	6,381
20	34	2,105	22	209	165	1,829	264	88	4,683
27	35	968	0	79	98	1,655	242	229	3,271
SEPT. 3	36	1,611	9	76	284	6,254	919	322	9,475
10	37	299	0	19	126	4,527	318	96	5,385
17	38	41	3	13	23	3,425	182	131	3,817
24	39	19	19	15	8	3,545	199	23	3,828
OCT. 1	40	0	0	7	9	1,647	129	0	1,792
8	41	Sonar removed from river							
TOTAL		44,883	2,430	3,164	1,264	23,575	2,938	1,725	79,975

RS=Sockeye salmon, KS=Chinook Salmon, PS=Pink Salmon, CS=Chum Salmon, SS=Cocho Salmon,
SH=Steelhead Trout, DV=Dolly Varden Char

Table 13. Stikine River sonar counts, by species, based on fishwheel catches adjusted for "shadow" areas, 1983.

WEEK ENDING	STAT WEEK	RS	KS	PS	CS	SS	SH	DV	TOTAL COUNTS
JUNE 18	25	36	326	0	0	0	0	36	399
25	26	458	2,751	0	0	0	0	0	3,209
JULY 2	27	985	1,313	4,268	0	0	0	328	6,894
9	28	1,369	293	6,357	0	0	0	0	8,019
16	29	489	244	8,801	0	0	0	1,141	10,675
23	30	903	95	10,645	190	0	0	950	12,784
30	31	236	89	10,226	207	0	30	621	11,408
AUG. 6	32	569	36	12,404	462	142	0	1,457	15,070
13	33	128	0	8,379	383	51	0	588	9,528
20	34	115	115	5,064	345	403	0	518	6,560
27	35	441	221	1,764	992	1,103	0	1,103	5,524
SEPT. 3	36	1,493	0	5,475	1,244	6,968	0	747	15,926
10	37	998	0	998	166	2,663	0	3,744	8,570
17	38	172	0	860	0	2,409	172	1,204	4,817
24	39	6,577	0	0	0	0	0	0	6,577
OCT. 1	40	0	0	0	0	475	475	951	1,901
8	41								
TOTALS		14,970	5,483	75,241	3,991	14,213	677	13,387	127,961

RS=Sockeye Salmon, KS=Chinook Salmon, PS=Pink Salmon, CS=Chum Salmon, SS=Coho Salmon,
SH=Steelhead Trout, DV=Dolly Varden Char

completely beyond the capture range of the nets. Dolly Varden char less than 400 mm in length may not be captured in the gill nets but will be counted by the sonar. The sonar counts would then reflect the catch bias by elevating counts of other species more susceptible to capture, such as sockeye and pink salmon.

The use of sonar counters may be appropriate in systems with only one or two species migrating at a given time. Sonar may also be appropriate during times of single species migrations, such as the Stikine during the fall coho salmon migration. Such situations as these may result in the true total fish counts or in an accurate index of species abundance. Sonar counters are probably not appropriate for use in systems, such as the Stikine, when simultaneous migration of several species is occurring.

Monetary costs and the difficulties associated with obtaining sonar counts on the Stikine River far outweigh the benefits of sonar counting. Sonar counting has not proven timely for the Stikine River due to the difficulties associated with species allocation and count expansion. If the sonar is to be used for inseason management purposes then the counts will have to be expanded and allocated by an accurate, real-time method. After-the-fact changes in allocation and expansion are not acceptable. Gillnet test fishing alone can provide inseason run timing and escapement estimates that are as useful as sonar counting and at a much lower cost. It is our recommendation that sonar counting of sockeye salmon be discontinued on the Stikine River.

An attempt at assessing gillnet selectivity for mark-recapture sampling should be undertaken for future population estimation studies. Gill nets hung at a hanging ratio of greater than 2:1 (two meshes of web per one stretched mesh distance of cork and lead line) will entangle fish at a greater rate than commercial gill nets which are normally hung at a ratio less than 2:1. Entanglement rather than actual gilling presents problems with selectivity because the size of fish caught is not directly correlated with the size of gillnet mesh used. Loosely hung gill nets are desirable to use in tagging projects because they reduce capture mortalities by reducing the gill damage normally associated with gillnetting and, in turn, allow us to release greater numbers of unharmed, marked fish into the population.

Problems with selectivity assessment in the Canadian gillnet fishery involves the differences in hanging ratios between the various fishermen, differences in the types of net used, and the problems with recording the numbers of fish gilled and entangled. These problems may prohibit the determination of accuracy in population studies, however, such a program should be attempted in order to increase the accuracy of our estimates.

ACKNOWLEDGMENTS

We would like to thank the following field personnel for their efforts at keeping the project running smoothly during the 1983 field season; Nevette Bowen, James Cariello, Joel Elrod, Randy Erickson, Gerry Merrigan, Nancy Ratner, Shelagh Sands, Vicki Walsh, and Ann Maltby and Dave Gordon of LGL Ltd., Canada.

Thanks also goes to Gary Gunstrom for critical review of the manuscript, and to Rexanne Eide, Jackie Tyson, and Liz Smith for clerical assistance, manuscript preparation, and keeping things in order at the office.

We also wish to acknowledge the Juneau Stock Biology Group: Andy McGregor, Scott McPherson, Glen Oliver, Ben Van Alen, and Sue Walls for their assistance with the scale reading and scale pattern analysis.

LITERATURE CITED

- Bell, M.C. 1973. Fisheries handbook of engineering requirements and biological criteria. Fisheries engineering research program. Corps of Engineers, North Pacific Division. Portland, Oregon. Chapter Six.
- Bergmann, W. 1978. Salmon spawning populations of the Stikine River. Alaska Department of Fish and Game. Unpubl.
- Craig, P.C. 1985. Identification of sockeye salmon (*Oncorhynchus nerka*) stocks in the Stikine River based on egg size measurements. Can. J. Fish. Aquat. Sci. 42: 1696-1701.
- Edgington, J. and B. Lynch. 1982. 1982 Stikine studies annual report. Alaska Department of Fish and Game. Unpubl.
- International North Pacific Fisheries Commission. 1963. Annual Report-1961.
- McCart, P. 1983. Fish populations associated with proposed hydro-electric dams on the Stikine and Iskut Rivers. Vol. 3. Appendix. Preliminary report by P. McCart Biological Consultants, Ltd. for B.C. Hydro and Power Authority.
- McPherson, S. 1983. Stock apportionment: Stikine River 1979-1983. Alaska Department of Fish and Game, memorandum to S. Marshall, Dec. 14, 1983.
- Oliver, G. 1983. 1982 Stikine River escapement estimate. Alaska Department of Fish and Game, memorandum to D. Cantillon, April 6, 1983.
- Robson, D.S. and H.A. Regier. 1971. Estimation of population number and mortality rates. In W.E. Ricker, ed. Methods for assessment of fish production in freshwater. IBP Handbook No. 3. Pages 131-165.

APPENDIX A

1983 daily and cumulative Stikine River fishwheel catch tables.

Appendix Table A-1. 1983 daily and cumulative catches for fishwheel 1A.

		<u>Kings</u>		<u>Sockeye</u>		<u>Pinks</u>		<u>Chum</u>		<u>Coho</u>		<u>Dolly Varden</u>	
		Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.
June	8	1	1	0	0	0	0	0	0	0	0	1	1
	9	3	4	0	0	0	0	0	0	0	0	0	1
	10	0	4	0	0	0	0	0	0	0	0	0	1
	11	1	5	0	0	0	0	0	0	0	0	0	1
	12	1	6	0	0	0	0	0	0	0	0	0	1
	13	0	6	0	0	0	0	0	0	0	0	0	1
	14	0	6	0	0	0	0	0	0	0	0	0	1
	15	1	7	0	0	0	0	0	0	0	0	0	1
	16	0	7	0	0	0	0	0	0	0	0	0	1
	17	2	9	1	1	0	0	0	0	0	0	0	1
	18	0	9	0	1	0	0	0	0	0	0	0	1
	19	2	11	0	1	0	0	0	0	0	0	0	1
	20	1	12	0	1	0	0	0	0	0	0	0	1
	21	0	12	0	1	0	0	0	0	0	0	0	1
	22	0	12	0	1	0	0	0	0	0	0	0	1
	23	0	12	0	1	0	0	0	0	0	0	0	1
	24	0	12	0	1	0	0	0	0	0	0	0	1
	25	0	12	0	1	0	0	0	0	0	0	0	1
	26	0	12	0	1	0	0	0	0	0	0	0	1
	27	0	12	0	1	0	0	0	0	0	0	0	1
	28	0	12	0	1	0	0	0	0	0	0	0	1
	29	0	12	0	1	0	0	0	0	0	0	1	2
	30	0	12	1	2	2	2	0	0	0	0	0	2
July	1	0	12	0	2	0	2	0	0	0	0	0	2
	2	2	14	0	2	1	3	0	0	0	0	0	2
	3	1	15	0	2	1	4	0	0	0	0	0	2
	4	0	15	0	2	0	4	0	0	0	0	0	2
	5	0	15	1	3	0	4	0	0	0	0	0	2
	6	0	15	0	3	2	6	0	0	0	0	0	2
	7	1	16	0	3	1	7	0	0	0	0	0	2
	8	0	16	0	3	3	10	0	0	0	0	0	2
	9	0	16	0	3	4	14	0	0	0	0	0	2
	10	0	16	0	3	3	17	0	0	0	0	0	2
	11	1	17	0	3	5	22	0	0	0	0	2	4
	12	0	17	1	4	0	22	0	0	0	0	0	4
	13	0	17	0	4	4	26	0	0	0	0	2	6

-Continued-

Appendix Table A-1. 1983 daily and cumulative catches for fishwheel 1A (continued).

		<u>Kings</u>		<u>Sockeye</u>		<u>Pinks</u>		<u>Chum</u>		<u>Coho</u>		<u>Dolly Varden</u>	
		Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.
July	14	0	17	1	5	0	26	0	0	0	0	3	9
	15	0	17	0	5	1	27	0	0	0	0	0	9
	16	0	17	0	5	0	27	0	0	0	0	1	10
	17	0	17	1	6	19	46	0	0	0	0	9	19
	18	1	18	1	7	2	48	0	0	0	0	1	20
	19	0	18	1	8	10	58	1	1	0	0	0	20
	20	0	18	2	10	3	61	0	1	0	0	0	20
	21	0	18	1	11	9	70	1	2	0	0	0	20
	22	0	18	2	13	4	74	1	3	0	0	0	20
	23	1	19	2	15	6	80	0	3	0	0	0	20
	24	1	20	1	16	6	86	0	3	0	0	0	20
	25	0	20	1	17	9	95	0	3	0	0	0	20
	26	0	20	2	19	3	98	0	3	0	0	1	21
	27	0	20	0	19	16	114	0	3	0	0	0	21
	28	0	20	0	19	9	123	0	3	0	0	2	23
	29	0	20	0	19	8	131	0	3	0	0	0	23
	30	0	20	0	19	7	138	1	4	0	0	1	24
	31	0	20	2	21	11	149	0	4	0	0	0	24
Aug.	1	0	20	1	22	3	152	0	4	1	1	0	24
	2	0	20	1	23	3	155	0	4	0	1	0	24
	3	0	20	1	24	10	165	0	4	0	1	0	24
	4	0	20	2	26	16	181	1	5	1	2	16	40
	5	0	20	1	27	15	196	0	5	2	4	7	47
	6	0	20	1	28	5	201	1	6	0	4	8	55
	7	0	20	0	28	19	220	0	6	0	4	3	58
	8	0	20	1	29	11	231	1	7	0	4	0	58
	9	0	20	2	31	4	235	2	9	0	4	6	64
	10	0	20	0	31	2	237	0	9	0	4	2	66
	11	0	20	1	32	2	239	0	9	0	4	5	71
	12	0	20	0	32	1	240	0	9	0	4	1	72
	13	0	20	1	33	3	243	0	9	0	4	0	72
	14	0	20	0	33	1	244	0	9	0	4	0	72
	15	0	20	0	33	3	247	0	9	0	4	0	72
	16	0	20	0	33	3	250	0	9	0	4	4	76
	17	0	20	0	33	1	251	0	9	0	4	1	77
	18	0	20	1	34	0	251	1	10	0	4	0	77

1 WF, 1 SH

1 WF

1 WF

-Continued-

Appendix Table A-1. 1983 daily and cumulative catches for fishwheel 1A (continued).

		<u>Kings</u>		<u>Sockeye</u>		<u>Pinks</u>		<u>Chum</u>		<u>Coho</u>		<u>Dolly Varden</u>	
		Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.
Aug.	19	1	21	0	34	0	251	0	10	1	5	1	78
	20	0	21	0	34	1	252	0	10	3	8	0	78
	21	0	21	1	35	0	252	1	11	0	8	1	79
	22	0	21	0	35	1	253	0	11	2	10	4	83
	23	0	21	1	36	4	257	0	11	1	11	4	87
	24	0	21	0	36	1	258	0	11	0	11	0	87
	25	0	21	0	36	0	258	0	11	0	11	0	87
	26	0	21	0	36	0	258	1	12	1	12	0	87
	27	0	21	1	37	0	258	0	12	2	14	0	87
	28	0	21	2	39	1	259	0	12	1	15	0	87
	29	0	21	0	39	1	260	0	12	6	21	0	87
	30	0	21	1	40	0	260	0	12	3	24	0	87
	31	0	21	0	40	0	260	0	12	3	27	0	87
													1 WF
Sept.	1	0	21	2	42	0	260	1	13	1	28	0	87
	2	0	21	0	42	4	264	1	14	0	28	0	87
	3	0	21	0	42	1	265	0	14	1	29	0	87
	4	0	21	0	42	0	265	0	14	1	30	0	87
	5	0	21	2	44	0	265	0	14	1	31	0	87
	6	0	21	2	46	0	265	0	14	1	32	1	88
	7	0	21	1	47	0	265	0	14	0	32	5	93
	8	0	21	0	47	0	265	0	14	4	36	14	107
	9	0	21	1	48	0	265	0	14	1	37	8	115
	10	0	21	1	49	0	265	0	14	0	37	0	115
	11	0	21	0	49	0	265	0	14	1	38	1	116
	12	0	21	0	49	1	266	0	14	0	38	0	116
	13	0	21	0	49	0	266	0	14	0	38	0	116
	14	0	21	0	49	0	266	0	14	1	39	0	116
	15	0	21	0	49	0	266	0	14	0	39	0	116
	16	0	21	0	49	0	266	0	14	0	39	0	116
	17	0	21	0	49	0	266	0	14	0	39	0	116
	18	0	21	0	49	0	266	0	14	0	39	1	117
	19	0	21	0	49	0	266	0	14	0	39	1	118
	20	0	21	0	49	0	266	0	14	0	39	0	118
													1 CT
													1 SH

Appendix Table A-2. 1983 daily and cumulative catches for fishwheel 1B.

		Kings		Sockeye		Pinks		Chum		Coho		Dolly Varden	
		Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.
June	29	0	0	0	0	2	2	0	0	0	0	0	0
	30	0	0	0	0	1	3	0	0	0	0	0	0
July	1	0	0	0	3	6	0	0	0	0	0	0	
	2	0	0	0	0	1	7	0	0	0	0	0	0
	3	0	0	2	2	2	9	0	0	0	0	0	0
	4	1	1	0	2	3	12	0	0	0	0	0	0
	5	0	1	1	3	2	14	0	0	0	0	0	0
	6	0	1	0	3	8	22	0	0	0	0	0	0
	7	0	1	1	4	5	27	0	0	0	0	0	0
	8	0	1	0	4	8	35	0	0	0	0	0	0
	9	0	1	2	6	6	41	0	0	0	0	0	0
	10	0	1	0	6	8	49	0	0	0	0	1	1
	11	0	1	0	6	4	53	0	0	0	0	0	1
	12	0	1	0	6	14	67	0	0	0	0	0	1
	13	0	1	0	6	12	79	0	0	0	0	2	3
	14	0	1	0	6	21	100	0	0	0	0	0	3
	15	0	1	0	6	10	110	0	0	0	0	1	4
	16	0	1	2	8	5	115	0	0	0	0	2	6
	17	0	1	1	9	14	129	0	0	0	0	0	6
	18	0	1	2	11	10	139	0	0	0	0	1	7
	19	0	1	2	13	7	146	0	0	0	0	2	9
	20	0	1	1	14	9	155	0	0	0	0	0	9
	21	0	1	1	15	7	162	0	0	0	0	2	11
	22	0	1	1	16	17	179	0	0	0	0	3	14
	23	0	1	0	16	15	194	0	0	0	0	1	15
	24	0	1	0	16	36	230	1	1	0	0	3	18
	25	0	1	0	16	8	238	0	1	0	0	1	19
	26	0	1	0	16	12	250	0	1	0	0	4	23
	27	0	1	1	17	11	261	1	2	0	0	3	26
	28	0	1	1	18	6	267	0	2	0	0	3	29
	29	0	1	0	18	4	271	0	2	0	0	1	30
	30	0	1	0	18	12	283	0	2	0	0	2	32
	31	0	1	0	18	20	303	0	2	0	0	1	33

-Continued-

Appendix Table A-2. 1983 daily and cumulative catches for fishwheel 1B (continued).

		<u>Kings</u>		<u>Sockeye</u>		<u>Pinks</u>		<u>Chum</u>		<u>Coho</u>		<u>Dolly Varden</u>	
		Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.
Aug.	1	0	1	0	18	9	312	1	3	0	0	2	35
	2	0	1	1	19	11	323	1	4	0	0	2	37
	3	0	1	1	20	9	332	0	4	0	0	1	38
	4	0	1	1	21	12	344	2	6	0	0	1	39
	5	0	1	0	21	8	352	1	7	0	0	0	39
	6	0	1	1	22	4	356	2	9	0	0	1	40
	7	0	1	0	22	14	370	0	9	0	0	0	40
	8	0	1	0	22	10	380	0	9	0	0	1	41
	9	0	1	0	22	10	390	2	11	0	0	0	41
	10	0	1	0	22	1	391	0	11	0	0	0	41
	11	0	1	0	22	4	395	0	11	1	1	0	41
	12	0	1	0	22	1	396	0	11	0	1	0	41
	13	0	1	0	22	2	398	1	12	1	2	0	41
	14	0	1	0	22	1	399	1	13	0	2	0	41
	15	0	1	0	22	2	401	0	13	0	2	0	41
	16	0	1	0	22	2	403	1	14	0	2	0	41
	17	0	1	0	22	4	407	1	15	1	3	0	41
	18	1	2	1	23	1	408	0	15	0	3	0	41
	19	0	2	0	23	1	409	1	16	1	4	0	41
	20	0	2	0	23	1	410	0	16	1	5	0	41
	21	0	2	0	23	0	410	1	17	0	5	0	41
	22	0	2	0	23	0	410	2	19	0	5	0	41
	23	0	2	0	23	0	410	2	21	0	5	0	41
	24	0	2	0	23	0	410	0	21	0	5	0	41
	25	0	2	0	23	0	410	0	21	0	5	0	41
	26	1	3	0	23	0	410	0	21	1	6	0	41
	27	0	3	0	23	0	410	1	22	1	7	0	41
	28	0	3	0	23	0	410	0	22	1	8	0	41
	29	0	3	0	23	0	410	1	23	1	9	0	41
	30	0	3	0	23	0	410	0	23	1	10	0	41
	31	0	3	0	23	1	411	0	23	0	10	0	41
Sept.	1	0	3	0	23	0	411	1	24	0	10	0	41
	2	0	3	0	23	0	411	1	25	1	11	0	41
	3	0	3	0	23	0	411	0	25	0	11	0	41
	4	0	3	0	23	0	411	0	25	1	12	0	41

-Continued-

Appendix Table A-2. 1983 daily and cumulative catches for fishwheel 1B (continued).

		<u>Kings</u>		<u>Sockeye</u>		<u>Pinks</u>		<u>Chum</u>		<u>Coho</u>		<u>Dolly Varden</u>	
		Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.
Sept.	1	0	3	0	23	0	411	1	24	0	10	0	41
	2	0	3	0	23	0	411	1	25	1	11	0	41
	3	0	3	0	23	0	411	0	25	0	11	0	41
	4	0	3	0	24	0	411	0	25	1	12	0	41
	5	0	3	0	23	0	411	0	25	0	12	0	41
	6	0	3	0	23	0	411	0	25	1	13	0	41
	7	0	3	0	23	1	412	0	25	1	14	0	41
	8	0	3	0	23	0	412	1	26	0	14	0	41
	9	0	3	0	23	1	413	0	26	0	14	0	41
	10	0	3	0	23	0	413	0	26	0	14	0	41
	11	0	3	0	23	0	413	0	26	0	14	0	41
	12	0	3	0	23	0	413	0	26	0	14	0	41
	13	0	3	0	23	0	413	0	26	0	14	0	41
	14	0	3	0	23	0	413	0	26	0	14	0	41
	15	0	3	0	23	0	413	0	26	0	14	0	41
	16	0	3	0	23	0	413	0	26	0	14	0	41
	17	0	3	0	23	0	413	0	26	0	14	0	41
	18	0	3	0	23	0	413	0	26	0	14	0	41
	19	0	3	0	23	0	413	0	26	0	14	0	41
	20	0	3	0	23	0	413	0	26	0	14	0	41
	21	0	3	0	23	0	413	0	26	0	14	0	41
	22	0	3	0	23	0	413	0	26	0	14	0	41
	23	0	3	0	23	0	413	0	26	0	14	0	41
	24	0	3	0	23	0	413	0	26	0	14	0	41
	25	0	3	0	23	0	413	0	26	0	14	0	41
	26	0	3	0	23	0	413	0	26	0	14	0	41
	27	0	3	0	23	0	413	0	26	0	14	0	41
	28	0	3	0	23	0	413	0	26	0	14	0	41
	29	0	3	0	23	0	413	0	26	0	14	0	41
	30	0	3	0	23	0	413	0	26	0	14	0	41

Appendix Table A-3. 1983 daily and cumulative catches for fishwheel 2A.

		<u>Kings</u>		<u>Sockeye</u>		<u>Pinks</u>		<u>Chum</u>		<u>Coho</u>		<u>Dolly Varden</u>	
		Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.
June	21	1	1	0	0	0	0	0	0	0	0	0	0
	22	0	1	0	0	0	0	0	0	0	0	0	0
	23	2	3	0	0	0	0	0	0	0	0	0	0
	24	0	3	0	0	0	0	0	0	0	0	0	0
	25	0	3	1	1	0	0	0	0	0	0	0	0
	26	0	3	1	2	0	0	0	0	0	0	0	0
	27	0	3	0	2	0	0	0	0	0	0	0	0
	28	0	3	0	2	0	0	0	0	0	0	0	0
	29	0	3	0	2	0	0	0	0	0	0	0	0
	30	1	4	0	2	1	1	0	0	0	0	0	0
July	1	0	4	0	0	2	3	0	0	0	0	0	0
	2	1	5	1	3	0	3	0	0	0	0	0	10
	3	0	5	1	4	0	3	0	0	0	0	0	0
	4	0	5	2	6	4	7	0	0	0	0	0	0
	5	0	5	0	6	1	8	0	0	0	0	0	0
	6	0	5	3	9	8	16	0	0	0	0	0	0
	7	0	5	0	9	4	20	0	0	0	0	0	0
	8	0	5	1	10	2	22	0	0	0	0	0	0
	9	0	5	0	10	1	23	0	0	0	0	0	0
	10	0	5	1	11	4	27	0	0	0	0	0	0
	11	0	5	0	11	4	27	0	0	0	0	0	0
	12	0	5	0	11	4	31	0	0	0	0	0	0
	13	1	6	0	11	1	32	0	0	0	0	0	0
	14	1	7	0	11	7	39	0	0	0	0	0	0
	15	0	7	0	11	4	43	0	0	0	0	0	0
	16	0	7	1	12	1	44	0	0	0	0	0	0
	17	0	7	0	12	4	48	0	0	0	0	0	0
	18	0	7	0	12	17	65	0	0	0	0	0	0
	19	0	7	1	13	6	71	0	0	0	0	0	0
	20	0	7	0	13	9	80	0	0	0	0	0	0
	21	0	7	0	13	27	107	0	0	0	0	0	0
	22	0	7	0	13	4	111	1	1	0	0	1	1
	23	0	7	0	13	25	136	1	1	0	0	0	1
	24	0	7	0	13	27	163	0	1	0	0	0	1
	25	0	7	0	13	13	176	0	1	0	0	0	0
	26	0	7	1	14	20	196	0	1	0	0	0	1
	27	0	7	0	14	4	200	0	1	0	0	0	1

-Continued-

Appendix Table A-3. 1983 daily and cumulative catches for fishwheel 2A (continued).

		<u>Kings</u>		<u>Sockeye</u>		<u>Pinks</u>		<u>Chum</u>		<u>Coho</u>		<u>Dolly Varden</u>	
		Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.
July	28	0	7	1	15	13	213	0	1	0	0	0	1
	29	0	7	0	15	14	227	2	3	0	0	0	1
	30	0	7	0	15	35	262	0	3	0	0	0	1
	31	0	7	3	18	9	271	1	4	0	0	0	1
Aug.	1	0	7	0	18	7	278	0	4	0	0	0	1
	2	0	7	0	18	16	294	0	4	0	0	0	1
	3	0	7	0	18	27	321	0	4	0	0	0	1
	4	1	8	0	18	34	355	0	4	0	0	0	1
	5	0	8	0	18	16	371	0	4	0	0	1	2
	6	0	8	0	18	15	386	1	5	0	0	1	3
	7	0	8	0	18	15	401	0	5	0	0	0	3
	8	0	8	0	18	26	427	1	6	0	0	1	4
	9	0	8	0	18	10	437	1	7	0	0	1	5
	10	0	8	0	18	14	451	1	8	0	0	1	6
	11	0	8	0	18	14	465	0	8	0	0	0	6
	12	0	8	0	18	5	470	0	8	0	0	1	7
	13	0	8	0	18	14	484	1	9	0	0	1	8
	14	0	8	0	18	5	489	0	9	0	0	3	11
	15	0	8	0	18	3	492	1	10	0	0	0	11
	16	0	8	0	18	3	495	0	10	0	0	0	11
	17	0	8	0	18	4	499	0	10	0	0	0	11
	18	0	8	0	18	10	509	0	10	0	0	0	11
	19	0	8	0	18	10	519	0	10	0	0	0	11
	20	0	8	0	18	1	520	0	10	0	0	0	11
	21	0	8	0	18	0	520	0	10	0	0	1	12
	22	0	8	0	18	0	520	0	10	0	0	0	12
	23	1	9	0	18	1	521	0	10	0	0	0	12
	24	0	9	0	18	1	522	0	10	0	0	0	12
	25	0	9	1	19	0	522	0	10	0	0	0	12
	26	0	9	0	19	1	523	0	10	1	1	0	12
	27	0	9	0	19	0	523	0	10	0	1	0	12
	28	0	9	0	19	0	523	0	10	0	1	0	12
	29	0	9	1	20	2	525	0	10	0	1	0	12
	30	0	9	0	20	1	526	0	10	2	3	1	13
	31	0	9	0	20	2	528	0	10	1	4	0	13

-Continued-

Appendix Table A-3. 1983 daily and cumulative catches for fishwheel 2A (continued).

		<u>Kings</u>		<u>Sockeye</u>		<u>Pinks</u>		<u>Chum</u>		<u>Coho</u>		<u>Dolly Varden</u>	
		Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.
Sept.	1	0	9	0	20	1	529	0	10	2	6	0	13
	2	0	9	0	20	0	529	0	10	1	7	1	14
	3	0	9	0	20	0	529	0	10	0	7	0	14
	4	0	9	1	21	0	529	0	10	0	7	0	14
	5	0	9	1	21	1	530	0	10	0	7	0	14
	6	0	9	1	21	0	530	0	10	0	7	0	14
	7	0	9	1	21	1	531	1	11	2	9	2	16
	8	0	9	1	22	1	532	0	11	1	10	3	19
	9	0	9	2	24	2	534	0	11	1	11	7	26
	10	0	9	1	25	1	535	0	11	1	12	5	31
	11	0	9	1	26	1	536	0	11	0	12	2	33
	12	0	9	0	26	0	536	0	11	0	12	1	34
	13	0	9	0	26	0	536	0	11	1	13	1	35
	14	0	9	0	26	0	536	0	11	0	13	0	35
	15	0	9	0	26	0	536	0	11	1	14	2	37
	16	0	9	0	26	0	536	0	11	0	14	0	37
	17	0	9	0	26	0	536	0	11	0	14	0	37
	18	0	9	0	26	0	536	0	11	0	14	0	37
	19	0	9	0	26	0	536	0	11	0	14	0	37
	20	0	9	0	26	0	536	0	11	0	14	0	37
	21	0	9	1	27	0	536	0	11	0	14	0	37
	22	0	9	0	27	0	536	0	11	0	14	0	37
	23	0	9	0	27	0	536	0	11	0	14	0	37
	24	0	9	0	27	0	536	0	11	0	14	0	37
	25	0	9	0	27	0	536	0	11	0	14	0	37
	26	0	9	0	27	0	536	0	11	1	15	1	38
	27	0	9	0	27	0	536	0	11	0	15	1	39
	28	0	9	0	27	0	536	0	11	0	15	0	39

1 SH

Appendix Table A-4. 1983 daily and cumulative catches for fishwheel 2B.

		<u>Kings</u>		<u>Sockeye</u>		<u>Pinks</u>		<u>Chum</u>		<u>Coho</u>		<u>Dolly Varden</u>	
		Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.
July	22	0	0	0	0	0	0	0	0	0	0	0	0
	23	0	0	0	0	0	0	0	0	0	0	0	0
	24	0	0	0	0	0	0	0	0	0	0	0	0
	25	0	0	0	0	6	6	0	0	0	0	0	0
	26	1	1	0	0	17	23	0	0	0	0	0	0
	27	0	1	0	0	7	30	0	0	0	0	0	0
	28	0	1	0	0	17	47	0	0	0	0	0	0
	29	1	2	0	0	12	59	1	1	0	0	0	0
	30	0	2	0	0	14	73	1	2	0	0	0	0
	31	0	2	0	0	4	77	0	2	0	0	0	0
Aug.	1	0	2	0	0	2	79	0	2	0	0	0	0
	2	0	2	0	0	3	82	0	2	0	0	0	0
	3	0	2	0	0	29	111	0	2	0	0	0	0
	4	0	2	0	0	20	131	0	2	0	0	0	0
	5	0	2	0	0	29	160	1	3	0	0	0	0
	6	0	2	0	0	12	162	1	4	0	0	0	0
	7	0	2	0	0	12	184	2	6	0	0	0	0
	8	0	2	0	0	41	225	0	6	0	0	0	0
	9	0	2	0	0	30	225	0	6	0	0	0	0
	10	0	2	0	0	21	276	1	7	0	0	0	0
	11	0	2	0	0	5	281	1	7	0	0	0	0
	12	0	2	0	0	16	297	0	7	0	0	0	0
	13	0	2	0	0	11	308	2	9	0	0	0	0
	14	0	2	0	0	12	320	0	9	0	0	0	0
	15	0	2	0	0	6	326	0	9	0	0	0	0
	16	0	2	0	0	3	329	0	9	0	0	0	0
	17	0	2	0	0	4	333	0	9	0	0	0	0
	18	0	2	0	0	3	336	0	9	0	0	0	0
	19	0	2	0	0	30	339	0	9	0	0	0	0
	20	0	2	0	0	0	339	0	9	0	0	0	0
	21	0	2	0	0	5	344	1	10	1	1	0	0
	22	0	2	0	0	0	344	0	10	0	1	0	0
	23	0	2	0	0	1	345	0	10	0	1	0	0
	24	0	2	0	0	1	346	0	10	0	1	0	0
	25	0	2	0	0	0	346	0	10	0	1	0	0

-Continued-

Appendix Table A-4. 1983 daily and cumulative catches for fishwheel 2B (continued).

		<u>Kings</u>		<u>Sockeye</u>		<u>Pinks</u>		<u>Chum</u>		<u>Coho</u>		<u>Dolly Varden</u>	
		Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.
Aug.	25	0	2	0	0	0	346	0	10	0	1	0	0
	26	0	2	0	0	0	346	0	10	0	1	0	0
	27	0	2	0	0	0	346	0	10	0	1	0	0
	28	0	2	0	0	0	346	0	10	0	1	0	0
	29	0	2	0	0	0	346	0	10	0	1	0	0
	30	0	2	0	0	5	351	0	10	0	1	0	0
	31	0	2	0	0	3	354	0	10	1	2	1	1
Sept.	1	0	2	0	0	0	354	0	10	0	2	0	1
	2	0	2	0	0	0	354	0	10	2	4	0	1
	3	0	2	0	0	0	354	0	10	0	4	0	1
	4	0	2	0	0	0	354	0	10	0	4	0	1
	5	0	2	0	0	0	354	0	10	0	4	0	1
	6	0	2	0	0	2	356	0	10	1	5	0	1
	7	0	2	0	0	0	356	0	10	5	10	0	1
	8	0	2	0	0	0	356	0	10	0	10	0	1
	9	0	2	0	0	2	358	0	10	3	13	0	1
	10	0	2	0	0	0	358	0	10	7	20	0	1
	11	0	2	0	0	3	361	0	10	4	24	0	1
	12	0	2	0	0	0	361	0	10	0	24	0	1
	13	0	2	0	0	0	361	0	10	0	24	0	1
	14	0	2	0	0	0	361	0	10	0	24	0	1
	15	0	2	0	0	0	361	0	10	6	30	0	1
	16	0	2	0	0	0	361	0	10	0	30	0	1
	17	0	2	0	0	0	361	0	10	0	30	0	1
	18	0	2	0	0	0	361	0	10	0	30	0	1
	19	0	2	0	0	0	361	0	10	0	30	0	1
	20	0	2	0	0	0	361	0	10	0	30	0	1
	21	0	2	0	0	0	361	0	10	0	30	0	1
	22	0	2	0	0	0	361	0	10	0	30	0	1
	23	0	2	0	0	0	361	0	10	0	30	0	1

APPENDIX B

1983 Stikine River tag recovery tables.

Appendix Table B-1. 1983 Stikine River secondary Petersen disc tags recovered from sockeye salmon in the Canadian commercial fishery.

Tag Number	Date Recovered	Location Recovered (R.M.)	Date Tagged	Location Tagged (R.M.)*	Days to Recovery	(Mi/Day)
Z38008	7/10	Choquette (43.0)	7/4	2A (17.5)	6	(4.25)
Z37022	7/11	Doug's Own (51.0)	7/6	4 (16.5)	5	(6.9)
Z38012	7/11	Boundary H. (32.5)	7/6	2A (17.5)	5	(3.0)
Z38504	7/12	Fireboat Eddy (38.0)	7/8	4 (16.5)	4	(5.4)
Z38011	7/12	Boundary H. (32.5)	7/6	2A (17.5)	6	(2.5)
Z38753	7/17	Boathole (31.0)	7/14	5 (23.5)	3	(2.5)
Z38681	7/17	Lower Nets (31.5)	7/14	5 (23.5)	3	(2.7)
Z37013	7/17	Choquette (43.0)	7/11	4 (16.5)	6	(4.5)
Z38001	7/17	Choquette (43.0)	6/25	2A (17.5)	22	(1.2)
Z38523	7/18	Lower Nets (31.5)	7/11	4 (16.5)	7	(2.1)
Z38756	7/18	Lower Nets (31.5)	7/14	5 (23.5)	4	(2.0)
Z38828	7/18	Lower Nets (31.5)	7/15	5	3	(2.7)
Z38861	7/18	Lower Nets (31.5)	7/16	5	2	(4.0)
Z38503	7/18	Boundary H. (32.5)	7/8	4 (16.5)	10	(1.6)
Z38802	7/18	Boundary H. (32.5)	7/15	5 (23.5)	3	(5.3)
Z38638	7/18	Sand Pt. (34.0)	7/13	5	5	(2.1)
Z37025	7/18	Lower Nets (31.5)	7/7	4 (16.5)	11	(1.4)
Z38620	7/19	Sand Pt. (34.0)	7/13	5 (23.5)	6	(1.8)
Z38743	7/19	Choquette (43.0)	7/14	5	5	(3.3)
Z38602	7/19	Choquette (43.0)	7/12	5	7	(2.8)
Z38749	7/19	Sand Pt. (34.0)	7/14	5	5	(2.1)
Z38775	7/19	One Pull Eddy ?	7/15	5	4	?
Z38693	7/20	Choquette (43.0)	7/14	5	6	(3.3)
Z38619	7/20	Pouhle (40.0)	7/13	5	7	(2.8)
Z38850	7/20	Boathole (31.0)	7/16	5	4	(1.9)
Z38526	7/20	Choquette (43.0)	7/12	4 (16.5)	8	(3.3)
Z38807	7/20	Choquette (43.0)	7/15	5 (23.5)	5	(3.9)
Z38697	7/20	Pouhle (40.0)	7/14	5	6	(2.75)
Z38835	7/20	Boundary H. (32.5)	7/15	5	5	(1.8)
Z38676	7/20	Boundary H. (32.5)	7/14	5	6	(1.5)
Z38525	7/20	Boundary H. (32.5)	7/11	4 (16.5)	9	(1.8)
Z37021	7/21	Boundary H. (32.5)	7/6	4	15	(1.1)
Z38816	7/21	Boundary H. (32.5)	7/15	5 (23.5)	6	(1.5)
Z38533	7/21	Lower Nets (31.5)	7/12	3 (15.0)	9	(1.8)
Z38737	7/21	Lower Nets (31.5)	7/14	5 (23.5)	7	(1.1)
Z38527	7/21	Choquette (43.0)	7/12	4 (16.5)	9	(2.9)
Z38896	7/21	Doug's Own (51.0)	7/16	5 (23.5)	5	(5.5)
Z38647	7/21	Pouhle (40.0)	7/13	5 "	8	(2.1)
Z38704	7/21	Pouhle (40.0)	7/14	5 "	7	(2.4)
Z38719	7/21	Boundary H. (32.5)	7/14	5 "	7	(1.3)
Z38790	7/24	Choquette (43.0)	7/15	5 "	9	(2.2)
Z38271	7/24	Choquette (43.0)	7/21	5 "	3	(6.5)
Z38864	7/24	Choquette (43.)	7/16	5 "	8	(2.4)
Z38986	7/24	Choquette (43.0)	7/19	5 "	5	(3.9)
Z38672	7/24	Choquette (43.0)	7/13	5 "	11	(1.8)

-Continued-

Appendix Table B-1. 1983 Stikine River secondary Petersen disc tags recovered from sockeye salmon in the Canadian commercial fishery (continued).

Tag Number	Date Recovered	Location Recovered (R.M.)	Date Tagged	Location Tagged (R.M.)*	Days to Recovery	(Mi/Day)
Z38718	7/24	Lower Nets (31.5)	7/14	5 (23.5)	10	(0.8)
Z38883	7/24	Lower Nets (31.5)	7/16	5 "	8	(1.0)
Z38514	7/24	Boundary H. (32.5)	7/10	4 (16.5)	14	(1.1)
Z38968	7/24	Boundary H. (32.5)	7/18	5 (23.5)	6	(1.5)
Z37035	7/24	Boundary H. (32.5)	7/21	1A (16.5)	3	(5.3)
Z38270	7/24	Boundary H. (32.5)	7/21	5 (23.5)	3	(3.0)
Z38265	7/24	Boundary H. (32.5)	7/21	5 "	3	(3.0)
Z38860	7/24	Boundary H. (32.5)	7/16	5 "	8	(1.1)
Z38699	7/25	Sand Pt. (34.0)	7/14	5 "	11	(1.0)
Z38637	7/25	One Pull Eddy?	7/13	5 "	12	?
Z38940	7/25	Lower Two (31.5)	7/18	5 "	7	(1.1)
Z38254	7/25	Lower Two (31.5)	7/21	5 "	4	(2.0)
Z38882	7/25	Lower Two (31.5)	7/16	5 "	9	(0.9)
Z38229	7/25	Lower Two (31.5)	7/20	5 "	5	(1.8)
Z38689	7/25	Lower Two (31.5)	7/14	5 "	11	(0.7)
Z38667	7/25	Lower Two (31.5)	7/13	5 "	12	(0.7)
Z38811	7/25	Lower Two (31.5)	7/15	5 "	10	(0.8)
Z38728	7/25	Avalanche (48.0)	7/14	5 "	11	(2.2)
Z38823	7/25	Doug's Own (51.0)	7/15	5 "	10	(2.8)
Z38276	7/25	Choquette (43.0)	7/22	5 "	3	(6.5)
Z38230	7/25	Choquette (43.0)	7/20	5 "	5	(3.9)
Z38214	7/25	Choquette (43.0)	7/20	5 "	5	(3.9)
Z38862	7/25	Choquette (43.0)	7/16	5 "	9	(2.2)
Z38290	7/25	Pouhle (40.0)	7/22	5 "	3	(5.5)
Z38535	7/25	Pouhle (40.0)	7/13	3 (15.0)	12	(2.1)
Z38273	7/25	Pouhle (40.0)	7/21	5 (23.5)	4	(4.1)
Z38618	7/25	Lower Nets (31.5)	7/13	3	12	(0.7)
Z38644	7/25	Lower Nets (31.5)	7/13	5	12	(0.7)
Z38936	7/25	Lower Nets (31.5)	7/18	5	7	(1.1)
Z38939	7/25	Lower Nets (31.5)	7/18	5	7	(1.1)
Z38711	7/25	Choquette (43.0)	7/14	5	11	(1.8)
Z38018	7/25	Choquette (43.0)	7/16	2A (17.5)	9	(2.8)
Z38024	7/25	Choquette (43.0)	7/19	2A	6	(4.3)
Z38909	7/25	Lower Nets (31.5)	7/17	5 (23.5)	8	(1.0)
Z38286	7/25	Lower Nets (31.5)	7/22	5	3	(2.7)
Z38621	7/25	Lower Nets (31.5)	7/13	5	12	(0.7)
Z38781	7/25	Lower Nets (31.5)	7/15	5	10	(0.8)
Z38943	7/25	Lower Nets (31.5)	7/18	5	7	(1.1)
Z38963	7/26	Boundary H. (32.5)	7/18	5	8	(1.1)
Z38532	7/26	Boundary H. (32.5)	7/12	3 (15.0)	14	(1.3)
Z38539	7/26	Boundary H. (32.5)	7/13	3	13	(1.3)
Z38877	7/26	Boundary H. (32.5)	7/16	5 (23.5)	10	(0.9)
Z38679	7/26	Boundary H. (32.5)	7/14	5	12	(0.8)
Z38826	7/26	Boundary H. (32.5)	7/15	5	11	(0.8)
Z38928	7/26	Boundary H. (32.5)	7/17	5	9	(1.0)

-Continued-

Appendix Table B-1. 1983 Stikine River secondary Petersen disc tags recovered from sockeye salmon in the Canadian commercial fishery (continued).

Tag Number	Date Recovered	Location Recovered (R.M.)	Date Tagged	Location Tagged (R.M.)*	Days to Recovery	(Mi/Day)
Z38636	7/26	Lower Nets (31.5)	7/13	5	13	(0.6)
Z38901	7/26	Lower Nets (31.5)	7/17	5	9	(0.9)
Z38800	7/26	One Pull Eddy ?	7/15	5	11	?
Z38219	7/26	One Pull Eddy ?	7/20	5	6	?
Z38303	7/26	Sand Pt. (34.0)	7/23	5	3	(3.5)
Z38846	7/26	Sand Pt. (34.0)	7/16	5	10	(1.1)
Z38546	7/26	Avalanche (48.0)	7/13	5	13	(1.9)
Z38744	7/26	JLJ (45.0)	7/14	5	12	(1.8)
Z38927	7/26	Choquette (43.0)	7/17	5 (23.5)	9	(2.2)
Z38789	7/26	Choquette (43.0)	7/15	5	11	(1.8)
Z38635	7/26	Choquette	7/13	5	13	(1.5)
Z38817	7/26	Choquette	7/15	5	11	(1.8)
Z38872	7/26	Sand Pt. (34.0)	7/16	5	10	(1.1)
Z38212	7/26	Choquette (43.0)	7/20	5	6	(3.3)
Z38223	7/26	Choquette	7/20	5	6	(3.3)
Z38738	7/26	Sand Pt. (34.0)	7/14	5	12	(0.9)
Z38755	7/26	One Pull Eddy ?	7/14	5	12	?
Z38879	7/26	Boundary H. (32.5)	7/16	5	10	(0.9)
Z37038	7/26	Boundary H. (32.5)	7/23	1A (16.5)	3	(5.3)
Z38562	7/26	Boundary H. (32.5)	7/25	5 (23.5)	2	(4.5)
Z38264	7/26	Boundary H. (32.5)	7/21	5	5	(1.8)
Z38352	7/26	Boundary H. (32.5)	7/23	5	3	(3.0)
Z38354	7/27	Boundary H. (32.5)	7/24	5	3	(3.0)
Z38848	7/27	Boundary h.9#2.5)	7/16	5	11	(0.8)
Z38287	7/27	Boundary H. (32.5)	7/22	5	5	(1.8)
Z38935	7/27	Boundary H. (32.5)	7/18	5	9	(1.0)
Z38343	7/27	Sand Pt. (34.0)	7/23	5	4	(2.6)
Z38930	7/27	Choquette (43.0)	7/18	5	9	(2.2)
Z38780	7/27	One Pull Eddy ?	7/15	5	12	?
Z38224	7/27	One Pull Eddy ?	7/20	5	7	?
Z38750	7/27	One Pull Eddy ?	7/14	5	13	?
Z38337	7/27	One Pull Eddy ?	7/23	5	4	?
Z38384	7/27	One Pull Eddy ?	7/20	5	7	?
Z38206	7/27	One Pull Eddy ?	7/24	5	3	?
Z38500	7/27	One Pull Eddy ?	7/8	4 (16.5)	19	?
Z38628	7/27	Choquette (43.0)	7/13	5 (23.5)	14	(1.4)
Z38245	7/27	One Pull Eddy ?	7/21	5	6	?
Z38803	7/28	Fishery Eddy (32.5)	7/15	5	13	(1.5)
Z38332	7/28	Boundary H. (32.5)	7/23	5	5	(1.8)
Z38369	7/28	Sand Pt. (34.0)	7/24	5 (23.5)	4	(2.6)
Z38362	7/28	Boundary H. (32.5)	7/21	5	7	(1.3)
Z38875	7/28	Pouhle Lumber (40.0)	7/16	5	12	(1.4)
Z38322	7/28	Choquette (43.0)	7/23	5	5	(3.9)
Z38209	8/1	Pouhle Lumber (40.0)	7/20	5	12	(1.4)
Z38783	8/2	Choquette (43.0)	7/15	5	18	(1.1)
Z38034	8/2	Choquette	7/30	2A (17.5)	3	(8.5)

-Continued-

Appendix Table B-1. 1983 Stikine River secondary Petersen disc tags recovered from sockeye salmon in the Canadian commercial fishery (continued).

Tag Number	Date Recovered	Location Recovered (R.M.)	Date Tagged	Location Tagged (R.M.)	Days to Recovery	(Mi/Day)
Z38987	8/2	Boundary H. (32.5)	7/19	5 (23.5)	14	(1.4)
Z38231	8/2	Sand Pt. (34.0)	7/20	5	13	(0.8)
Z38827	8/2	Sand Pt.	7/15	5	18	(0.6)
Z38242	8/2	Sand Pt.	7/21	5	12	(0.9)
Z38023	8/3	Fast Eddy (31.5)	7/18	1B (17.0)	16	(1.9)
Z38339	8/3	Fast Eddy (31.5)	7/23	5 (23.5)	11	(0.7)
Z38378	8/3	Fast Eddy	7/24	5	9	(0.9)
Z38980	8/3	Boundary H. (32.5)	7/19	5	15	(0.6)
Z38291	8/3	Boat Hole (31.0)	7/22	5	12	(0.6)
Z38759	8/3	Choquette (43.0)	7/15	5	19	(1.0)
Z38346	8/3	Doug's Own (51.0)	7/23	5	11	(2.5)
	w/o fish					
Z38373	8/3	Boundary H. (32.5)	7/24	5	10	(0.9)
Z38571	8/3	Boundary H. (32.5)	7/29	5	5	(1.8)
Z38238	8/3	Choquette (43.0)	7/20	5	14	(1.4)
Z38806	8/3	Choquette	7/15	5	19	(1.0)
Z38033	8/4	Boundary H. (32.5)	7/30	2A (17.5)	5	(3.0)
Z38256	8/4	Boundary H.	7/21	5	14	(1.1)
Z38032	8/4	Pouhle Lumber (40.0)	7/28	2A (17.5)	7	(3.2)
Z38350	8/4	Pouhle Lumber	7/23	5 (23.5)	12	(1.4)
Z38215	8/4	Doug's Own (51.0)	7/20	5	15	(1.8)
Z38537	8/4	Sand Pt. (34.0)	7/13	3 (15.0)	22	(0.9)
Z38550	8/5	Boundary H. (32.5)	7/24	5 (23.5)	12	(0.8)
Z38518	8/5	Boundary H. (32.5)	7/23	5	13	(0.7)
Z38996	8/5	Boundary H. (32.5)	7/19	5 (23.5)	17	(0.5)
Z38385	8/5	Boundary H. (32.5)	7/24	5	12	(0.8)
Z38365	8/5	Pouhle Lumber (40.0)	7/24	5	12	(1.4)
Z38399	8/5	Pouhle Lumber	7/24	5	12	(1.4)
Z38921	8/5	Sand Pt. (34.0)	7/17	5	19	(0.6)
Z38843	8/5	Sand Pt.	7/16	5	20	(0.5)
Z38312	8/5	Sand Pt.	7/23	5	13	(0.8)
Z37041	8/6	One Pull Eddy ?	7/25	1A (16.5)	12	?
Z38814	8/6	Sand Pt. (34.0)	7/15	5 (23.5)	22	(0.5)
Z38895	8/6	Boundary H. (32.5)	7/17	5	20	(0.5)
Z38900	8/6	Pouhle Lumber (40.0)	7/17	5	20	(0.8)
Z38308	8/6	Choquette (43.0)	7/23	5	14	(1.4)
Z37028	8/8	Sand Pt. (34.0)	7/14	1A (16.5)	25	(0.7)
Z38368	8/8	Boundary H. (32.5)	7/24	5 (23.5)	15	(0.6)
Z38859	8/8	Boundary H. (32.5)	7/16	5	23	(0.4)
Z37049	8/9	Boundary H.	8/1	1A (16.5)	8	(2.0)
Z38316	8/9	Boundary H.	7/23	5 (23.5)	17	(0.5)
Z37043	8/9	Choquette (43.0)	7/26	1A (16.5)	14	(1.9)
Z38796	8/9	Pouhle Lumber (40.0)	7/15	5 (23.5)	25	(0.7)
Z38379	8/10	Sand Pt. (34.0)	7/24	5	17	(0.6)
Z38912	8/10	Boundary H. (32.5)	7/17	5	24	(0.4)
Z38396	8/10	Choquette (43.0)	7/24	5	17	(1.1)
Z38891	8/11	Choquette	7/24	5	18	(1.1)
	w/o fish					
Z38643	8/11	Boundary H. (32.5)	7/13	5	29	(0.3)

-Continued-

Appendix Table B-1. 1983 Stikine River secondary Petersen disc tags recovered from sockeye salmon in the Canadian commercial fishery (continued).

Tag Number	Date Recovered	Location Recovered (R.M.)	Date Tagged	Location Tagged (R.M.)*	Days to Recovery	(Mi/Day)
Z37058	8/17	Sand Pt. (34.0)	8/7	1A (16.5)	10	(1.8)
Z38226	8/18	Lower Nets (31.5)	7/20	5 (23.5)	29	(0.3)
Z38981	8/18	Lower Nets	7/19	5	30	(0.3)
Z38575	8/22	Boundary H. (32.5)	8/18	5	3	(3.0)
Z38578	8/22	Boundary H. (32.5)	8/20	5	2	(4.5)
Z38580	8/23	Boundary H.	8/20	5	3	(3.0)
Z38564	8/23	Pouhle Lumber (40.0)	7/24	5 (23.5)	30	(0.6)
Z38585	8/29	Lower Nets (31.5)	8/21	5	8	(1.0)
Z38705	9/6	Lower Nets	7/14	5	23	(0.3)

* Tagging Site Code: 1A & 1B = Fishwheels 1A & 1B; 2A & 2B = Fishwheels 2A & 2B;
3 = Kakwan Gillnet; 4 = Camp #1 Gillnet; 5 = Rock Is. Gillnet

Appendix Table B-2. 1983 Stikine River primary Petersen disc tags recovered in the Canadian commercial fishery.

Tag Number	Date Recovered	Location * Recovered (R.M.)	Date Tagged	Location Tagged	Miles Travelled	Days to (mi/ Recovery day)
WO3521	6/28	Above Iskut	6/12	Merrifield	100	16 (6.25)
WO3655	6/28	Above Iskut	6/15	Merrifield	100	13 (6.25)
WO2920	6/29	Lower (31.5)	6/12	Merrifield	83	17 (4.90)
WO2760	7/04	Lower (31.5)	6/28	Merrifield	83	6 (13.80)
WO3561	7/04	Choquette (43.0)	6/14	Merrifield	92	20 (4.60)
WO3577	7/05	Choquette (43.0)	6/14	Merrifield	92	21 (4.40)
WO2654	7/06	Lower (31.5)	6/24	Area 34	?	12
WO3875	7/06	Choquette (43.0)	6/24	Merrifield	92	12 (7.70)
WO0921	7/07	Boundary II(32.5)	6/29	Kindergarten	58.5	8 (7.30)
W51121	7/07	Boundary II(32.5)	6/30	Merrifield	82.5	7 (11.80)
WO3985	7/08	Boundary II(32.5)	6/30	Merrifield	82.5	8 (17.30)
WO2755	7/08	Choquette (43.0)	6/28	Merrifield	92	10 (9.20)
WO2774	7/08	Choquette (43.0)	6/28	Merrifield	92	10 (9.20)
W51147	7/10	Boundary H.(32.5)	6/30	Merrifield	82.5	11 (7.50)
W00223	7/11	Choquette (43.0)	6/23	Langara	--	
W10590	7/11	Choquette (43.0)	6/26	Fox	--	--
WO3944	7/11	Choquette (43.0)	6/29	Merrifield	92	12 (7.70)
WO3978	7/11	Doug's Own (51.7)	6/29	Merrifield	100	12 (8.30)
WO3698	7/11	Boathole (31.0)	6/18	Merrifield	81	23 (3.50)
W51260	7/12	Pouhle L. (40.0)	7/05	Merrifield	89	7 (12.70)
WO3927	7/12	Doug's Own (51.0)	6/29	Merrifield	100	13 (6.25)
W51179	7/12	Sand Pt. (34.0)	6/29	Merrifield	83	13 (6.40)
WO2747	7/13	Choquette	6/28	Merrifield	92	15 (6.10)
WO2046	7/13	Boathole (31.0)	6/30	Merrifield	81	13 (6.20)
WO2805	7/14	Boundary H.(32.5)	6/28	Merrifield	82.5	16 (5.20)
WO3564	7/14	Avalanche (48.0)	6/14	Merrifield	97	30 (3.10)
WO3959	7/17	Choquette (43.0)	6/29	Merrifield	92	18 (5.10)
W51516	7/18	Boundary H.(32.5)	7/07	Merrifield	82.5	11 (7.50)
WO2840	7/18	Doug's Own (51.0)	6/29	Merrifield	100	19 (5.30)
WO2241	7/18	Drift Below (32.0)	7/08	Merrifield	82	10 (8.20)
W51230	7/18	Choquette (43.0)	7/05	Merrifield	92	13 (7.10)
W16625	7/19	Pouhle L.(40.0)	6/30	Lower Dahl Is.	--	--

-Continued-

Appendix Table B-2. 1983 Stikine River primary Petersen disc tags recovered in the Canadian commercial fishery (continued).

Tag Number	Date Recovered	Location * Recovered (R.M.)	Date Tagged	Location Tagged	Miles Travelled	Days to (mi/ Recovery day)
W51762	7/20	Boundary H. (32.5)	7/14	Merrifield	82	6 (13.70)
W51718	7/21	Boundary H.	7/13	Merrifield	82	23 (3.60)
W10998	7/26	Boundary/Boathole (32.0)	7/03	Fox		
W46337	7/27	Choquette (43.0)	7/10	Fox	82	17 (4.82)
W53594	8/01	Boundary H. (32.5)	7/16	MacNamara	67.5	16 (4.28)
W53163	8/03	Boundary H. (32.5)	7/21	MacNamara	68.5	13 (5.30)
W50429	8/06	Choquette (43.0)	7/21	Marsh Is.	75.5	16 (4.70)
W53731	8/08	Choquette	7/27	MacNamara	79	12 (6.60)
W53761	8/08	Pouhle L. (40.0)	7/29	MacNamara	76	10 (7.60)
W05341	8/09	Boundary H. (32.5)	7/15	Quiet Harbor	58.5	25 (2.30)
W53744	8/09	Boundary H. (32.5)	7/27	Quiet Harbor	68.5	13 (5.30)
W53746	8/09	Pouhle L. (40.0)	7/27	Kakwan	76	13 (5.60)
W56530	8/10	Boundary H. (32.5)	7/30	Kakwan	68.5	11 (6.20)
W04656	8/10	Choquette (43.0)	7/15	Marsh Is.	75.5	26 (2.90)
W56676	8/31	Lower Nets (31.5)	8/03	MacNamara	69	28 (2.30)

* See Figure 1.

Appendix Table B-3. 1983 spaghetti and jaw tags recovered in the Canadian commercial fishery.

Tag Number	Species	Date Recovered	Location Recovered (R.M.)	Date Tagged	Location Tagged (R.M.)	Days to Recovery (Mi/ day)
Spag 01806						
Jaw 302	KS	7/5	Boundary H. (32.5)	6/20	1A (16.5)	15 (1.1)
00011	PS	7/8	"	7/02	1B	6 (2.6)
01808	PS	7/08	"	7/02	1B (17.0)	6 (2.6)
Jaw 007	PS	7/11	Lower Nets (31.5)	7/04	2A (17.5)	7 (2.0)
00014	PS	7/11	Boundary H. (32.5)	7/03	1B (17.0)	8 (1.9)
00035	PS	7/12	"	7/06	1B	6 (2.6)
00040	PS	7/12	"	7/06	1B	6 (2.6)
00056	PS	7/13	Sand Pt. (34.0)	7/08	1B	5 (3.4)
00107	PS	7/19	Boundary H. (32.5)	7/14	5 (23.5)	5 (1.8)
01880	PS	7/19	"	7/17	1A (16.5)	2 (8.0)
01872	PS	7/19	"	7/17	1A	2 (8.0)
00772	PS	7/20	"	7/15	2A (18.0)	5 (2.9)
01004	PS	7/24	Fast Eddy (31.5)	7/22	1B (17.0)	2 (7.0)
01875	PS	7/24	Boundary H. (32.5)	7/17	1A (17.5)	7 (2.2)
01884	PS	7/25	"	7/17	1A	8 (1.9)
01923	PS	7/25	"	7/23	1A	2 (7.8)
00789	KS	7/25	Sand Pt. (34.0)	7/17	5 (23.5)	8 (1.3)
00101	KS	7/25	"	7/14	5	11 (1.0)
00927	CS	7/25	"	7/24	5	1 (10.5)
00808	PS	7/26	JLJ (45.0)	7/20	5	6 (3.6)
00812	PS	7/26	Boundary H. (32.5)	7/21	5	5 (1.8)
00928	PS	7/26	"	7/24	5	2 (4.5)
01086	PS	7/26	"	7/24	1B (18.0)	2 (7.3)
00867	PS	7/27	Choquette (43.0)	7/18	2A (17.5)	9 (2.8)
01023	PS	7/27	JLJ (45.0)	7/23	2A	4 (6.9)
01107	PS	7/27	Boundary H. (32.5)	7/24	2A (17.5)	3 (5.0)
01010	PS	7/27	"	7/22	1B (17.0)	5 (3.1)
Jaw 349						
00913	CS	7/28	Fishery Eddy (33.5)	7/23	5 (23.5)	5 (3.3)
Jaw 348						
00910	CS	7/28	Boundary H. (32.5)	7/23	5	5 (3.1)
01286	PS	8/01	"	7/30	2A (17.5)	2 (7.5)
01958	CS	8/02	"	7/30	2A	3 (5.0)
01980	PS	8/03	Fast Eddy (31.5)	7/27	1A (16.5)	7 (2.1)
01366	PS	8/03	Boundary H. (32.5)	8/01	1B (17.0)	2 (7.8)
w/o fish						
01122	PS	8/03	Doug's Own (51.0)	7/24	1B (17.0)	10 (3.4)
01273	PS	8/04	Boundary H. (32.5)	7.30	2B (18.0)	5 (2.9)
01345	PS	8/04	"	7/31	1B (17.0)	4 (3.6)
w/o fish						
01211	PS	8/04	1 Pull Eddy (31.5)	7/28	2A (17.5)	7 (2.0)
01378	PS	8/04	" Lower (31.5)	8/02	1B (17.0)	2 (7.3)

-Continued-

Appendix Table B-3. 1983 spaghetti and jaw tags recovered in the Canadian commercial fishery (continued).

Tag Number	Species	Date Recovered	Location Recovered	Date Tagged	Location Tagged*	Days to (Mi/ Recovery day)
01478	PS	8/05	Boundary H. (32.5)	8/03	2A (17.5)	2 (7.5)
01196	PS	8/05	"	7/27	2B (18.0)	9 (1.6)
01401	PS	8/05	"	7/30	2A (17.5)	6 (2.5)
01603	PS	8/06	"	8/04	2A	2 (7.5)
01572	PS	8/08	"	8/05	1B (17.0)	3 (5.2)
01960	PS	8/08	"	7/27	1B	12 (1.3)
01419	PS	8/09	"	7/31	2A (16.5)	9 (1.8)
00944	PS	8/09	"	8/07	1A (17.5)	2 (7.5)
Jaw 1232						
R11147	CS	8/22	"	8/21	5 (23.5)	1 (9.0)
Spag 01525						
Jaw 316	CS	8/30	"	8/04	1A (16.5)	26 (.6)
R11116	PS	8/30	"	8/18	1A	12 (1.3)
Jaw 1207	SS	8/30	"	8/19	5 (23.5)	11 (.8)
Jaw 1222	SS	8/30	"	8/20	5	10 (.9)
Jaw 28	SS	9/06	Boathole (31.0)	8/30	2A (17.5)	7 (1.9)
Jaw 29	SS	9/06	"	8/31	2A	6 (2.3)
Jaw 384	SS	9/15	Iskut (44.0)	8/30	1B (17.0)	16 (1.7)
R11202	PS	9/21	Choquette (43.0)	9/05	2A (17.5)	16 (1.6)

* Tagging Site Code: 1A & 1B = Fishwheels 1A & 1B; 2A & 2B = Fishwheels 2A & 2B;
3 = Kakwan Gillnet; 5 = Rock Is. Gillnet

Appendix Table B-4. 1983 Stikine River tributary and miscellaneous tag recoveries.

Tag #	Species	Date Tagged	Location Tagged*	Date Recovered
<u>Andrews Creek 108-40-20</u>				
Petersen Disc tags:				
Z38029	RS	7/21	1B	8/22
Z37046	RS	7/28	"	8/14
Spaghetti Tags:				
01816 (Jaw tag #304)	KS	7/07	1A	7/22
01883	PS	7/17	"	8/22
01904 (Jaw tag #306)	CS	7/21	"	7/24
01975	PS	7/27	"	8/23
01985	PS	7/28	"	8/12
01583	PS	8/06	"	8/29
R10588	PS	8/14	"	8/29
00728	PS	7/13	1B	7/27
00827	PS	7/17	"	8/21
00844	PS	7/18	"	8/19
00853	PS	7/28	"	8/22
00963	PS	7/21	"	8/19
01007	PS	7/22	"	8/26
01084 (Jaw tag #12)	CS	7/24	"	7/27
01129	PS	7/29	"	8/18
01302	PS	7/29	"	9/12
01324	PS	7/30	"	8/25
01372	PS	8/01	"	8/28
R10579	PS	8/11	"	8/13
00842	PS	7/07	2A	8/17
00891	PS	7/20	"	8/11
00988	PS	7/21	"	8/09
01019	PS	7/23	"	Unknown
01109	PS	7/24	"	9/12
01170	PS	7/26	"	8/14
01182	PS	7/26	"	8/27
01208	PS	7/28	"	8/21
01426	PS	8/01	"	8/26
01466	PS	8/03	"	8/26
R11017	PS	8/11	"	8/23
R11026	PS	8/11	"	8/26
01132	PS	7/25	2B	8/13
01133	PS	7/25	"	9/12
01152	PS	7/26	"	8/21
01245	PS	7/29	"	8/19
01406	PS	7/30	"	8/11
01430	PS	8/01	"	8/20

-Continued-

Appendix Table B-4. 1983 Stikine River tributary and miscellaneous tag recoveries (continued).

Tag #	Species	Date Tagged	Location Tagged*	Date Recovered
01503	PS	8/03	2B	8/18
01504	PS	8/03	"	8/29
01693	PS	8/05	"	8/19
01754	PS	8/08	"	8/19
01773	PS	8/08	"	8/26
01795	PS	8/08	"	8/19
R10984	PS	8/10	"	9/12
R10987	PS	8/10	"	8/21
R11083	PS	8/14	"	8/23
R11094	PS	8/14	"	9/12
00090	PS	7/12	5	8/01
00095	PS	7/13	"	8/22
00110	PS	7/14	"	8/06
00115	KS	7/14	"	7/28
00792 (Jaw Tag #333)	CS	7/17	"	7/31
00908	PS	7/23	"	8/12

N. Arm Cr. 108-40-10
Petersen Disc tags:

14023	PS	7/20	Kakwan Pt.	8/26
14042	CS	7/26	Kakwan Pt.	8/02

Spaghetti Tags:

01914	CS	7/22	1A	7/25
R10570	PS.	8/10	"	9/26
01705	PS	8/06	2A	9/11
R10994	PS	8/10	"	9/11
R11120	PS	8/18	"	9/11
01638	PS	8/04	2B	9/11
R11128	PS	8/19	"	9/11
R11192	PS	8/30	"	9/11

Shakes (USA) 108-40-13

01235	PS	7/29	2B	10/10
01690	PS	8/05	"	10/10

Iskut R. downstream of Verrett R. (108-70-79)
Petersen Disc:

Z38334	RS	7/23	5	9/16
--------	----	------	---	------

* Tagging Site Code: 1A & 1B = Fishwheels 1A & 1B; 2A & 2B - Fishwheels 2A & 2B;
3 = Kakwan Gillnet; 5 = Rock Is. Gillnet

APPENDIX C

1983 daily and cumulative Canadian Stikine River commercial catch tables.

Appendix Table C-1. 1983 daily and cumulative sockeye salmon catch from the Canadian lower Stikine commercial fishery¹.

Date	Catch	Cumulative Catch	Proportion of Catch	Cumulative Proportion of Catch
6/15-6/17	45	45	.003	.003
6/20-6/22	179	224	.012	.015
6/27	70	294	.005	.020
6/28	262	556	.017	.037
6/29	394	950	.026	.063
6/30	352	1,302	.023	.086
7/4	219	1,521	.014	.100
7/5	598	2,119	.039	.139
7/6	737	2,856	.048	.187
7/7	718	3,574	.047	.234
7/8	499	4,073	.033	.267
7/10	242	4,315	.016	.283
7/11	646	4,961	.042	.325
7/12	695	5,656	.045	.370
7/13	793	6,449	.052	.422
7/14	549	6,998	.036	.458
7/17	279	7,277	.018	.476
7/18	558	7,835	.036	.512
7/19	468	8,303	.031	.543
7/20	425	8,728	.028	.571
7/21	300	9,028	.020	.591
7/24	311	9,339	.020	.611
7/25	765	10,104	.050	.661
7/26	697	10,801	.046	.707
7/27	589	11,390	.038	.745
7/28	269	11,659	.018	.763
8/1	50	11,709	.003	.766
8/2	172	11,881	.011	.777
8/3	459	12,340	.030	.807
8/4	560	12,900	.037	.844
8/5	556	13,456	.036	.880
8/6	252	13,708	.016	.896
8/8	219	13,927	.014	.910
8/9	579	14,497	.037	.947
8/10	366	14,863	.024	.971
8/11	159	15,022	.011	.981
8/16	45	15,067	.003	.984
8/17	100	15,167	.007	.991
8/18	46	15,213	.003	.994
8/22	39	15,252	.003	.997
8/23	56	15,308	.004	1.001 1.000

¹ These data are from daily ADF&G sampling and catch records. A discrepancy exists between these data and the published Canadian data. The Canadian data and the scale pattern analysis from their data can be found in Appendix A.

Appendix Table C-2. 1983 Canadian lower Stikine commercial fishery catches.

Week Ending	Stat Week	Species						
		RS	KS	PS	CS	SS	SH	DV
June 18	25	45	137	--	--	--	2	--
25	26	179	169	--	--	--	--	--
July 2	27	1078	200	5	--	--	--	5
9	28	2771	250	57	3	--	--	30
16	29	2925	113	165	7	--	4	32
23	30	2030	33	157	17	2	9	38
30	31	2631	16	238	36	6	36	68
Aug. 6	32	2049	14	253	63	54	66	73
13	33	1314	2	87	40	128	87	43
20	34	191	2	19	15	166	24	8
27	35	100	--	8	10	171	25	24
Sept. 3	36	146	1	7	25	566	83	29
10	37	78	--	5	33	1182	83	25
17	38	23	1	7	13	1904	101	73
24	39	5	5	4	2	987	55	7
Oct. 1	40	--	--	3	4	733	58	--
8	41	1	--	1	--	130	21	--
Total		15,566	943	1,016	268	6,029	654	455

APPENDIX D

1983 daily and cumulative sockeye salmon scale collection from
the Canadian and Stikine River commercial fishery.

Appendix Table D-1. 1983 daily and cumulative sockeye salmon scale collection from the Canadian lower Stikine River commercial fishery.

Date	Total Scales Collected	Cumulative Number of Scales Collected	Proportion of Collection	Cumulative Proportion of Collection
6/16	22	22	.011	.011
6/21	36	58	.018	.029
6/22	22	80	.011	.040
6/27	35	115	.018	.058
6/28	103	218	.053	.111
6/29	162	380	.083	.194
6/30	90	470	.046	.240
7/4	77	547	.039	.279
7/5	121	668	.062	.341
7/6	75	743	.038	.379
7/7	60	803	.031	.410
7/8	31	834	.016	.426
7/10	24	858	.012	.438
7/11	37	895	.019	.457
7/12	39	934	.020	.477
7/13	65	999	.033	.510
7/14	45	1,044	.023	.533
7/17	16	1,060	.008	.541
7/18	65	1,125	.033	.574
7/19	42	1,167	.021	.595
7/20	34	1,201	.017	.612
7/21	30	1,231	.015	.627
7/24	37	1,268	.019	.646
7/25	43	1,311	.022	.668
7/26	34	1,345	.017	.685
7/27	20	1,365	.010	.695
7/28	42	1,407	.021	.716
8/1	12	1,419	.006	.722
8/2	39	1,458	.020	.742
8/3	79	1,537	.040	.782
8/4	45	1,582	.023	.805
8/5	44	1,626	.022	.827
8/6	15	1,641	.008	.835
8/8	36	1,677	.018	.853
8/9	65	1,742	.033	.886
8/10	29	1,771	.015	.901
8/11	33	1,804	.017	.918
8/16	13	1,817	.007	.925
8/17	63	1,880	.032	.957
8/18	28	1,908	.014	.971
8/22	22	1,930	.011	.982
8/23	30	1,960	.015	.997 1.000

APPENDIX E

1983 daily and cumulative sockeye salmon counts at the Tahltan weir.

Appendix Table E-1. 1983 daily and cumulative sockeye salmon counts at the Tahltan weir.

Day	Count	Cumulative Count	Proportion of Count	Cumulative Proportion of Count
July 5	0	0	.0000	0.0000
July 6	1	1	.0000	0.0000
July 7	0	1	.0000	0.0000
July 8	0	1	.0000	0.0000
July 9	1	2	.0000	0.0001
July 10	0	2	.0000	0.0001
July 11	0	2	.0000	0.0001
July 12	0	2	.0000	0.0001
July 13	0	2	.0000	0.0001
July 14	2	4	.0001	0.0002
July 15	0	4	.0000	0.0002
July 16	4	8	.0002	0.0004
July 17	3	11	.0001	0.0005
July 18	1	12	.0000	0.0006
July 19	6453	6465	.3036	0.3041
July 20	2327	8792	.1095	0.4136
July 21	1487	10279	.0700	0.4836
July 22	1202	11481	.0565	0.5401
July 23	1165	12646	.0548	0.5949
July 24	1059	13705	.0498	0.6448
July 25	1139	14844	.0536	0.6983
July 26	757	15601	.0356	0.7340
July 27	739	16340	.0348	0.7687
July 28	507	16847	.0239	0.7926
July 29	316	17163	.0149	0.8074
July 30	337	17500	.0159	0.8233
July 31	436	17936	.0205	0.8438
Aug 1	407	18343	.0191	0.8630
Aug 2	104	18447	.0049	0.8678
Aug 3	392	18839	.0184	0.8863
Aug 4	54	18893	.0025	0.8888
Aug 5	592	19485	.0279	0.9167
Aug 6	109	19594	.0051	0.9218
Aug 7	100	19694	.0047	0.9265
Aug 8	160	19854	.0075	0.9340
Aug 9	101	19955	.0048	0.9388
Aug 10	190	20145	.0089	0.9477
Aug 11	51	20196	.0024	0.9501
Aug 12	1	20197	.0000	0.9502
Aug 13	29	20226	.0014	0.9515
Aug 14	152	20378	.0072	0.9587
Aug 15	0	20378	.0000	0.9587
Aug 16	146	20524	.0069	0.9656
Aug 17	66	20590	.0031	0.9687
Aug 18	28	20618	.0013	0.9700

-Continued-

Appendix Table E-1. 1983 daily and cumulative sockeye salmon counts at the Tahltan weir (continued).

Day	Count	Cumulative Count	Proportion of Count	Cumulative Proportion of Count
Aug 19	0	20618	.0000	0.9700
Aug 20	30	20648	.0014	0.9714
Aug 21	183	20831	.0086	0.9800
Aug 22	14	20845	.0007	0.9807
Aug 23	38	20883	.0018	0.9825
Aug 24	31	20914	.0015	0.9839
Aug 25	0	20914	.0000	0.9839
Aug 26	13	20927	.0006	0.9845
Aug 27	3	20930	.0001	0.9847
Aug 28	10	20940	.0005	0.9851
Aug 29	7	20947	.0003	0.9855
Aug 30	4	20951	.0002	0.9857
Aug 31	2	20953	.0001	0.9857
Sept 1	4	20957	.0002	0.9859
Sept 2	0	20957	.0000	0.9859
Sept 3	0	20957	.0000	0.9859
Sept 4	97	21054	.0046	0.9905
Sept 5	95	21149	.0045	0.9950
Sept 6	107	21256	.0050	1.0000
Sept 7	0	21256	.0000	1.0000

Mean Day of Count is July 25.08
Variance of Day of Count is 77.71

APPENDIX F

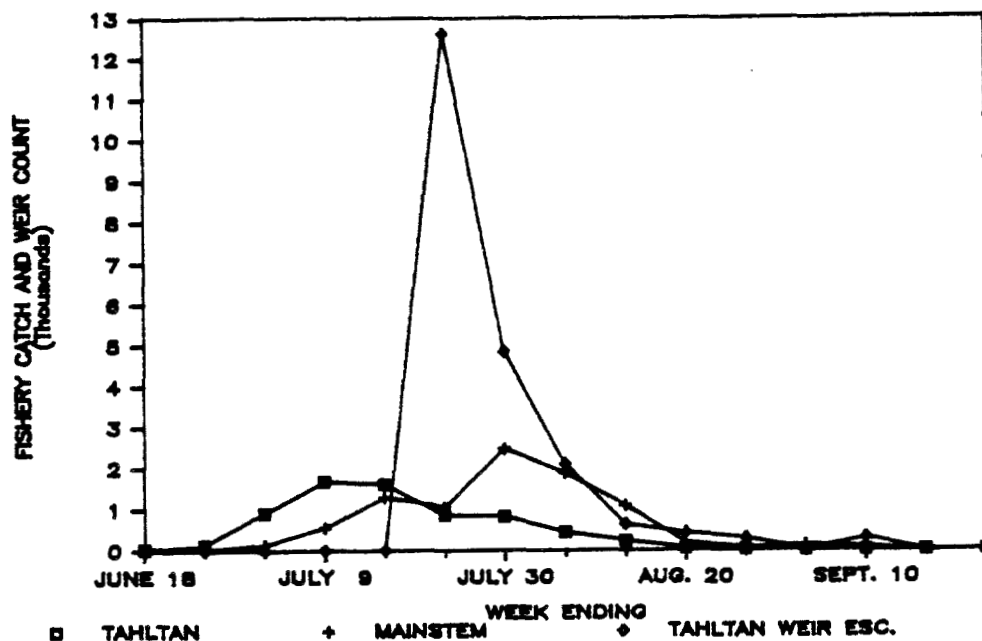
1983 Canadian Stikine River commercial fishery catch and stock composition tables and entry pattern curves developed from Canadian Dept. of Fisheries and Oceans data.

Appendix Table F-1. 1983 sockeye salmon stock composition of the Canadian lower Stikine River commercial gillnet fishery (Canadian data).

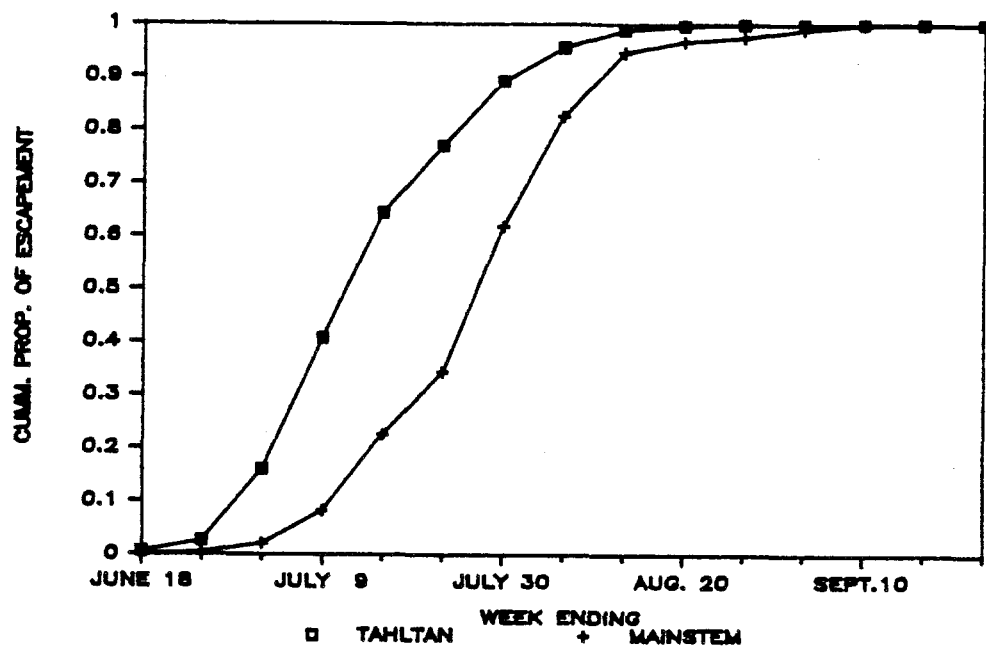
WEEK ENDING	TOTAL CATCH	TAHLTAN STOCK	MAINSTEM STOCKS
JUNE 18	45	39	6
25	179	139	40
	0		
JULY 2	1,060	914	146
9	2,240	1,680	560
16	2,912	1,611	1,301
23	1,919	852	1,067
30	3,312	828	2,484
	0		
AUG. 6	2,315	435	1,880
13	1,312	226	1,086
20	235	50	185
27	95	19	76
	0		
SEPT. 3	146	4	142
10	78	2	76
17	3	0	3
24	5	0	5
TOTALS	15,856	6,799	9,057
PERCENT	100.0%	42.9%	57.1%

Appendix Table F-2. Sockeye salmon stock composition of the Canadian lower Stikine River commercial gillnet fishery, 1983 (Canadian data).

WEEK ENDING	TAHLTAN STOCK	MAINSTEM STOCKS	TOTAL CATCH
JUNE 18	39	6	45
25	139	40	179
JULY 2	914	146	1,060
9	1,680	560	2,240
16	1,611	1,301	2,912
23	852	1,067	1,919
30	828	2,484	3,312
AUG. 6	435	1,880	2,315
13	226	1,086	1,312
20	50	185	235
27	19	76	95
SEPT. 3	4	142	146
10	2	76	78
17	0	3	3
24	0	5	5
TOTALS	6,799	9,057	15,856
PERCENT	42.9%	57.1%	100.0%



Appendix Figure F-1. Sockeye salmon run timing into the Canadian lower Stikine River commercial gillnet fishery and the weekly counts at the Tahltan Lake weir, 1983 (CDO data).



Appendix Figure F-2. Cumulative percent lower Stikine River sockeye salmon stock escapement, 1983 (CDFO data).

Because the Alaska Department of Fish and Game receives federal funding, all of its public programs and activities are operated free from discrimination on the basis of race, religion, color, national origin, age, sex, or handicap. Any person who believes he or she has been discriminated against should write to:

O.E.O.
U.S. Department of the Interior
Washington, D.C. 20240
